IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

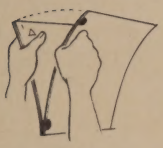
This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***

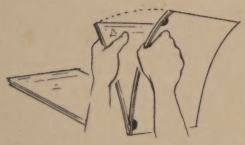


1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.



3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 491 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ JULY 1960

CONTENTS PHOTOFACT SET 491

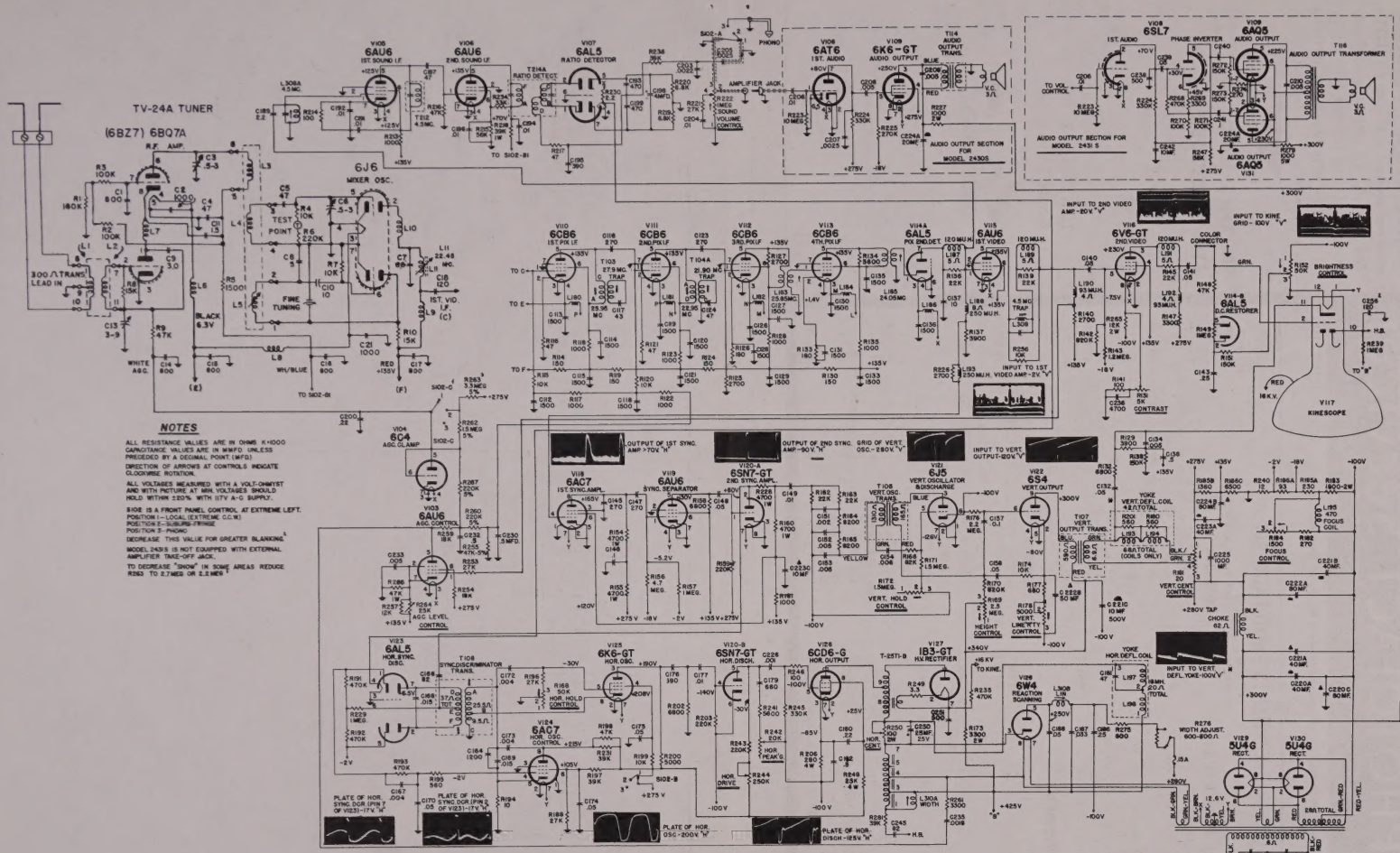
TRADE NAME AND MODEL	SET AND FOLDER NO.
TELEVISION RECEIVERS	
SETCHELL-CARLSON	
TL60, 60C, 1760 (Ch. 260)	491-1
ZENITH	
E2747E, EU, M, MU, R, RU, W, WU, E2755E, EU, R, RU, W, WU, E2764W, WU, E3354E, R, W, E3356E, H, R, W, E3360W (Ch. 18D20, Q, U, 18E20, Q, U, S-48433, S-48434)	491-2
OTHER EQUIPMENT	
AUTOMATIC	
RT-7B	491-3
TT528	491-4
BOGEN	
MX30	491-5
BUICK	
980051	491-6
CAPITOL	
919, 923, 925A	491-7
CORONADO	
RA1-9262A, RA1-9263A, RA1-9264A	491-8
MOTOROLA	
A1B, A1N, A1R, A1W (Ch. HS-744)	491-9
MOTOROLA, cont.	
SF14SL (Ch. HS-761)	491-10
SK28B, M, W, SK29B, M, W, SK30B, M, MC, W, SK31B, CW, M (Ch. HS-768, HS-769, HS-774, HS-793)	491-11
RCA VICTOR	
KS11, KS12, PM17, PM18, TPM11, TPM12 (Ch. RC-1192, RS-177A, RS-179)	491-12
RECORDIO	
591, 602 (Tape Recorder)	491-13
SILVERTONE	
2, 3, 4, 5 (Ch. 132.44301, 302, 303, .44401, 402)	491-14
214 (Ch. 132.48000, 132.48001)	491-15
254 (Ch. 528.59620, 528.59621)	491-16
TOSHIBA	
6TP-304	491-17
TRUETONE	
DC3088A	491-18
WESTINGHOUSE	
H-51MP1, H-51MP2, H-51MP3 (Ch. V-2508-1)	491-19
H-718T5, H-719T5, H-720T5 (Ch. V-2401-1)	491-20

This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

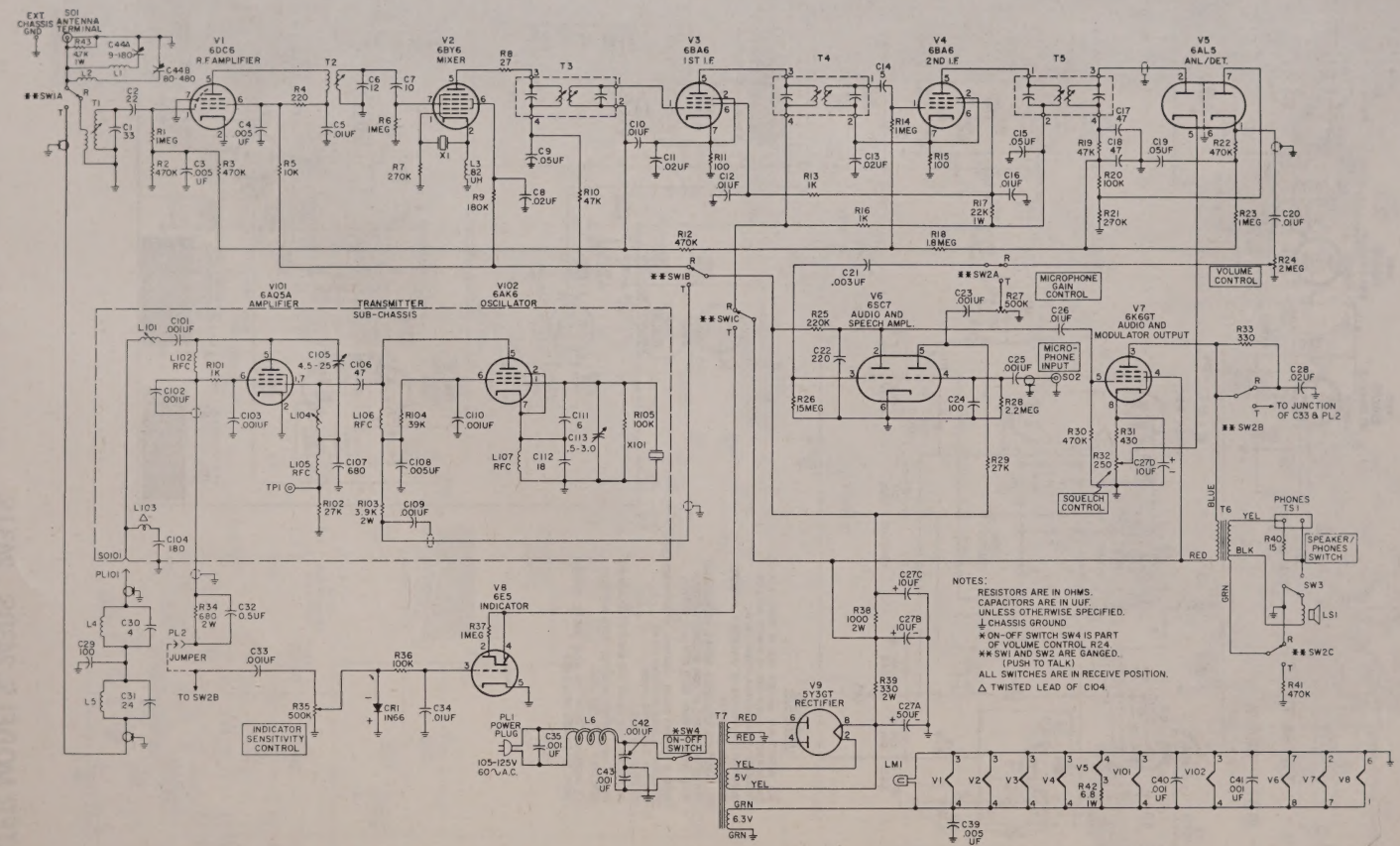
Hallicrafters
Model CB-1

Tech-Master Models
2430S, 2431S



TECH-MASTER MODELS 2430S, 2431S

Schematic Diagram Courtesy of Tech-Master Corporation



HALLICRAFTERS MODEL CB-1

Schematic Diagram Courtesy of Hallicrafters Co.

PHOTOFACT® Folder

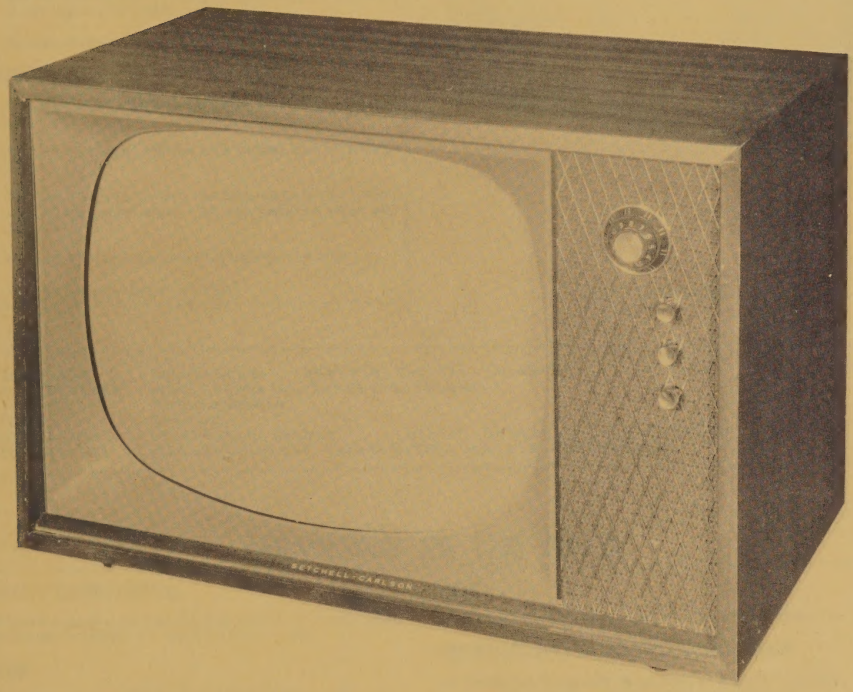
SETCHELL-CARLSON MODELS
TL60, 60C, 1760 (Ch. 260)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

SETCHELL-CARLSON MODELS
TL60, 60C, 1760 (Ch. 260)



MODEL TL60 (CH. 260)

SETCHELL-CARLSON MODELS
TL60, 60C, 1760 (Ch. 260)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SETCHELL-CARLSON MODELS TL60, 60C, 1760 (Ch. 260)

SETCHELL-CARLSON MODELS TL60, 60C, 1760 (Ch. 260)

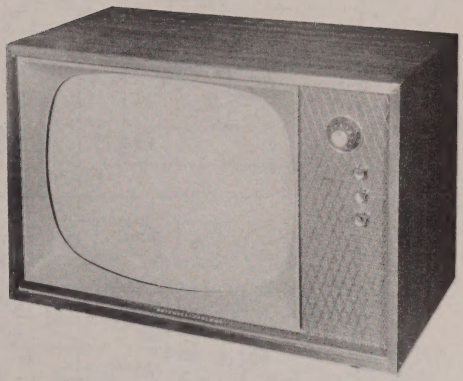
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL TL60

1. Remove 3 wood screws holding the rear cover. Remove rear cover.
2. Remove 5 push-on type knobs from front of cabinet.
3. Remove yoke plug, picture tube socket, hi voltage lead, and speaker plug.
4. Remove 2 screws holding antenna terminal board.
5. Remove 2 wood screws holding the chassis to the cabinet at the rear of the cabinet.
6. Remove chassis.

PICTURE TUBE REMOVAL MODEL TL60

1. Remove 8 wood screws holding the rear cover. Remove rear cover.
2. Remove yoke plug, picture tube socket, and hi voltage lead.
3. Remove 4 screws holding the trim strip at the bottom edge of the safety glass. Tilt out glass and mask and remove.
4. Remove 4 picture tube mounting bolts now visible.
5. Remove picture tube out the front.



MODEL TL60 (CH. 260)

TRADE NAME	Setchell-Carlson	Model TL60, 60C, 1760	Chassis 260
MANUFACTURER	Setchell-Carlson Inc., New Brighton, Minnesota		
TYPE SET	Television Receiver		
TUBES	Seventeen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING	120 Watts, 1.1 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 4 screws holding the trim strip at the bottom edge of the safety glass. Tilt glass out and remove.

FUSE

A 2 Amp. fuse is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

FUSE DEVICE

A 3Ω fusible resistor is used for low voltage power supply protection. For location, see R81 in Photo "Chassis-Bottom View".)

TUNER OSCILLATOR ADJUSTMENTS

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning Knobs.

AGC

No provision is made to vary the AGC on this receiver.

FOCUS

No provision is made to vary the focus on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency is adjusted by a Horizontal Hold Control. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector Secondary (A10) located at top of chassis.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

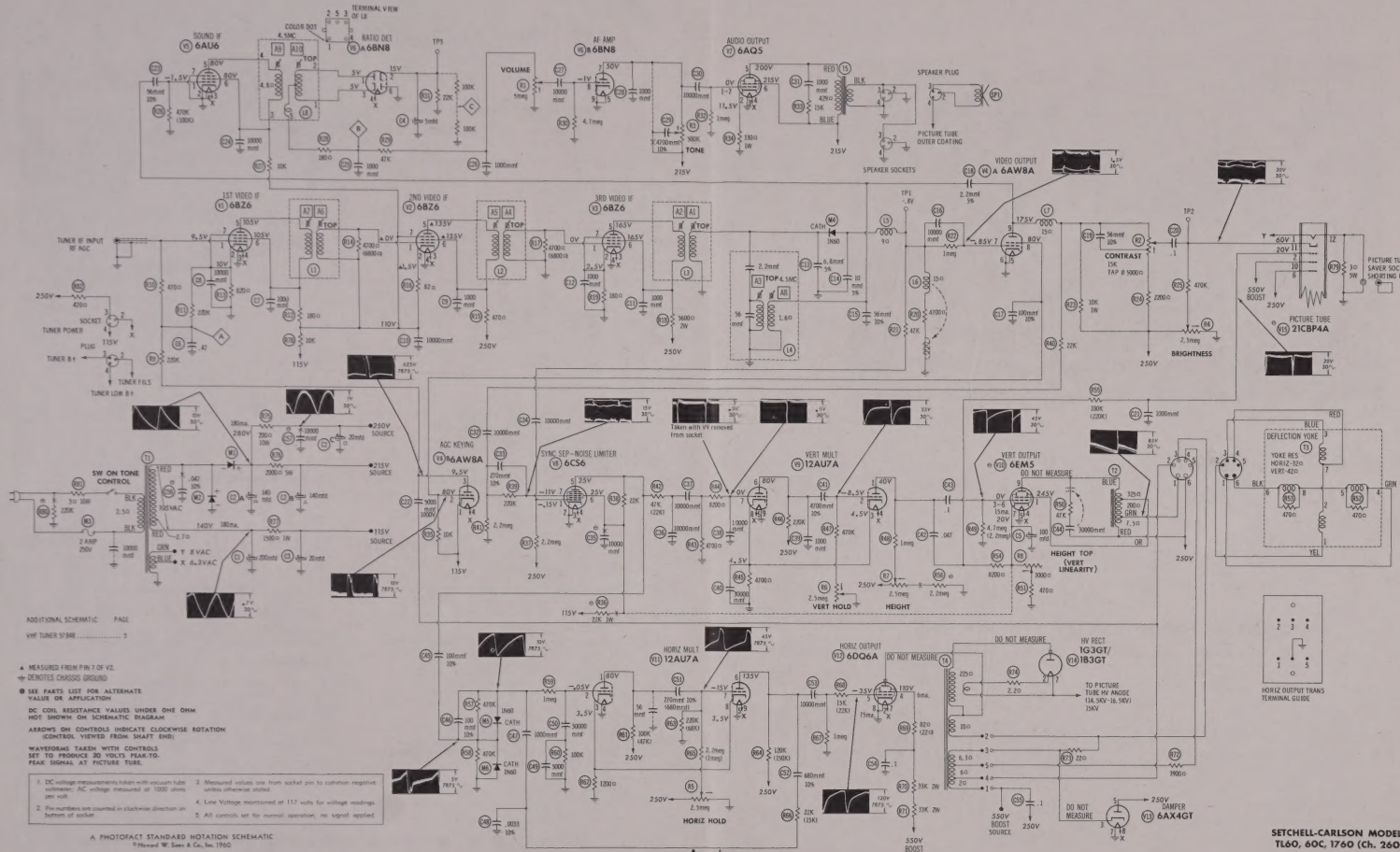
PICTURE TUBE SAVER

A plug is provided to increase filament voltage on the picture tube.

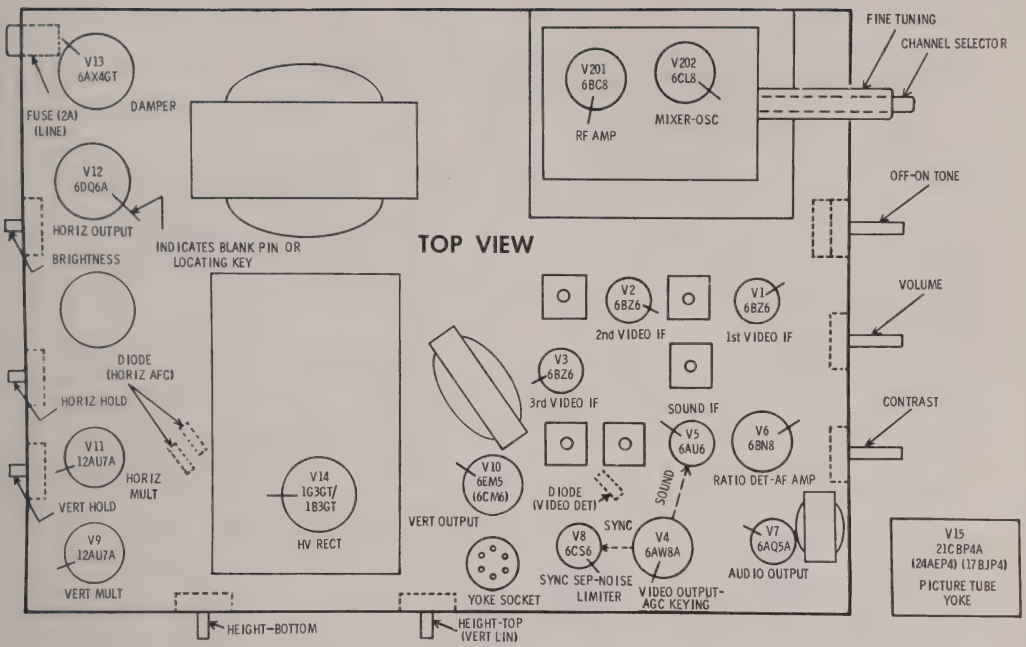
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JA908


SOUND IF V6 6AU6
RATIO DET V5 6AB8
AF AMP V6 6BN8
AUDIO OUTPUT V7 6AQ5
VOLUME
TONE
SPEAKER PLUG
SPEAKER SOCKETS
PICTURE TUBE OUTER COATING
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6BZ6
VIDEO OUTPUT V4 6AW8A
CONTRAST
BRIGHTNESS
PICTURE TUBE V11 21CBP4A
PICTURE TUBE SAVER SOCKET SHORTING PLUG
TUNER IF INPUT RF AGC
TUNER POWER
TUNER B+
TUNER FILS
TUNER LOW B+
SW ON TONE CONTROL
AGC KEYING V4 6AW8A
SYNC SEP—NOISE LIMITER V8 6CS6
VERT MULT V9 12AU7A
VERT OUTPUT V10 6EM5
DO NOT MEASURE
HEIGHT TOP (VERT LINEARITY)
VERT HOLD
HEIGHT
DEFLECTION YOKE
YOKE RES HORIZ-320 VERT-420
HORIZ MULT V11 12AU7A
HORIZ OUTPUT V12 6DQ6A
HV RECT 1G3GT/1B3GT
TO PICTURE TUBE HV ANODE 15K 5KV-18. 5KV 25KV
DAMPER V13 6AX4GT
HORIZ HOLD
HORIZ OUTPUT TRANS TERMINAL GUIDE
ADDITIONAL SCHEMATIC PAGE
VHF TUNER ST948 5
▲ MEASURED FROM PIN 7 OF V2.
⏚ DENOTES CHASSIS GROUND
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END).
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1960
SETCHELL-CARLSON MODELS
TL60, 60C, 1760 (Ch. 260)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (Line), Fusible Resistor (Line), Rectifiers (B+)

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V15
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, Rectifiers (B+)
Vert. off freq. V9, V10
Horiz. off freq. Diode (Horiz. AFC), V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V5, V6, V7
Overloaded picture V4

SYNC FAILURE
No vert. sync V8
No horiz. sync V8, Diode (Horiz. AFC)
No vert. or horiz. sync V8

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 9 volt bias supply to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .001mfd to pin 1 (grid) of 3rd Video IF Amp. Low side to chassis.	44MC (10MC Swp.)	41.25MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to TP-1. Low side to chassis.	A1, A2, A3	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust A3 to place 41.25MC marker in trap notch.
2.	High side thru .001mfd to pin 1 (grid) of 2nd Video IF Amp. Low side to chassis.	"	41.25MC 45.75MC	"	"	A4, A5	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
3.	High side thru .001mfd to pin 1 (grid) of 1st Video IF Amp. Low side to chassis.	"	"	"	"	A6, A7	"
4.	Place a thin insulated metal strip between the Mixer-Osc. tube and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	"	"	"	Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Repeat steps 1 thru 4, if necessary.

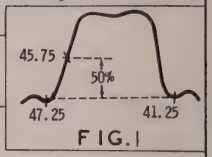
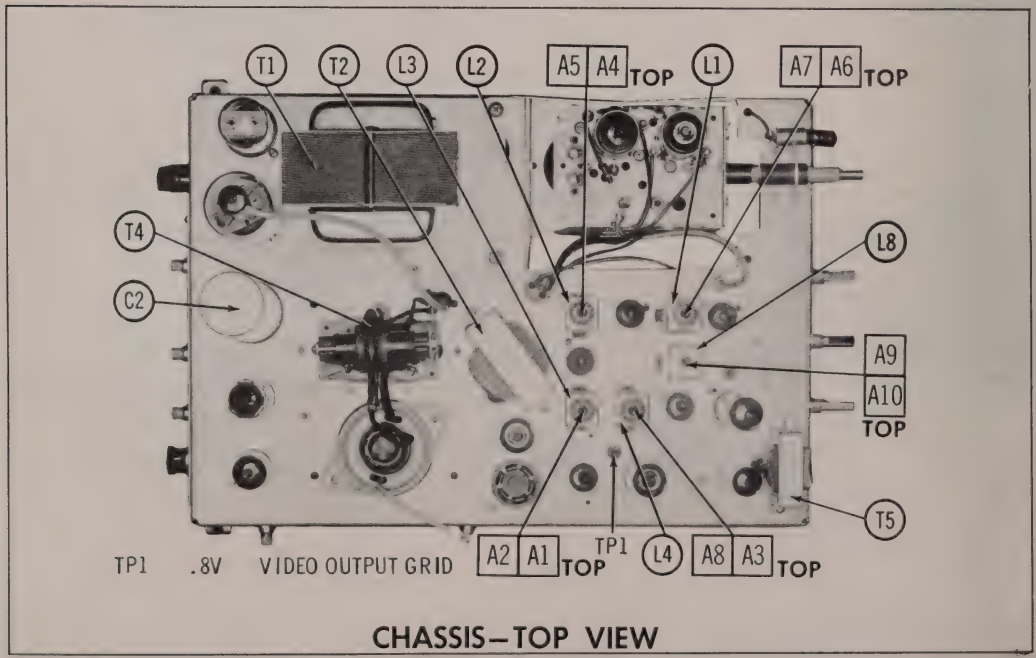


FIG. 1

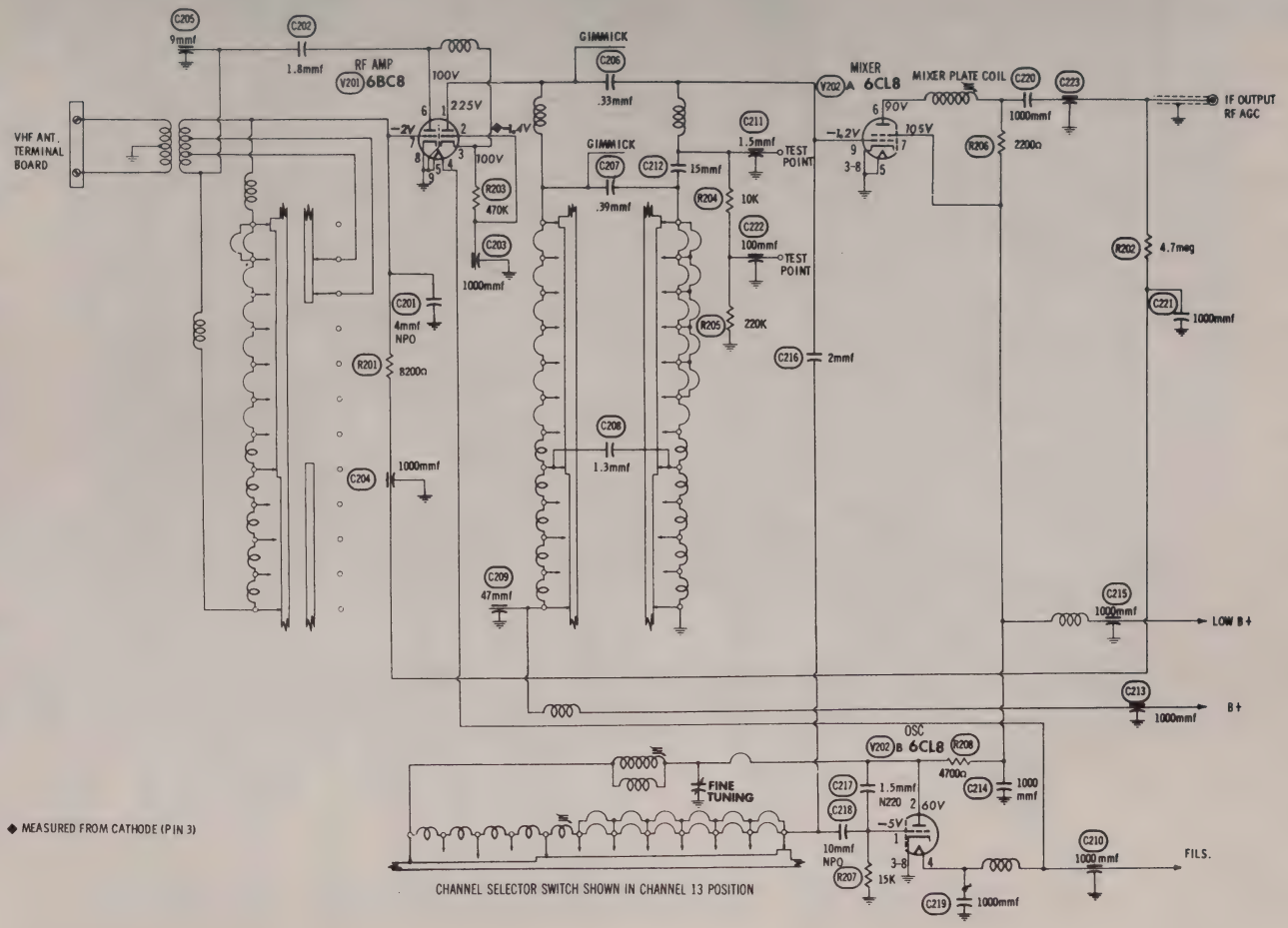
SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point TP-3 to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .001mfd to TP-1. Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	DC probe to TP-3. Common to chassis.	A8, A9	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.



CHASSIS—TOP VIEW

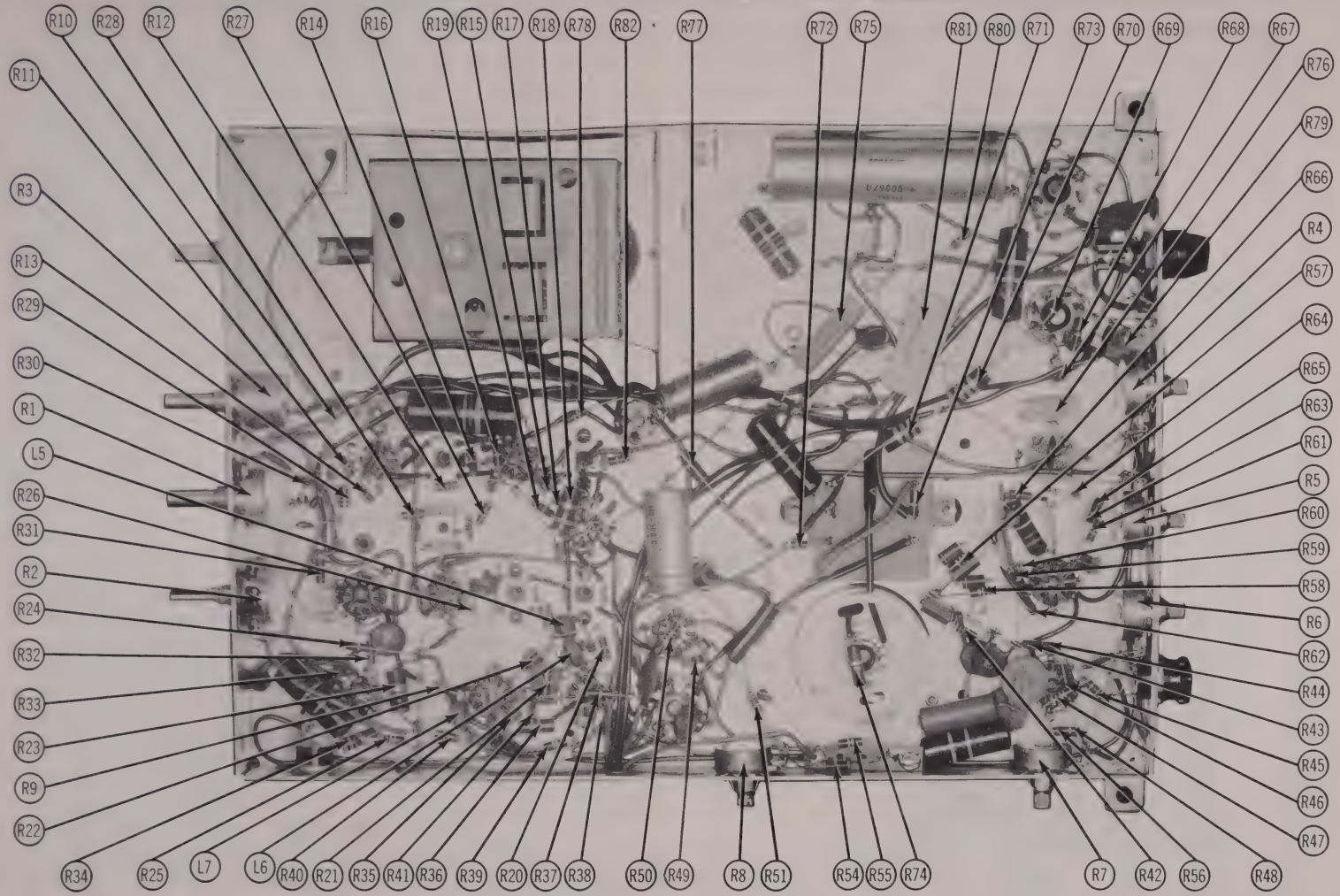


A PHOTOFACT STANDARD NOTATION SCHEMATIC

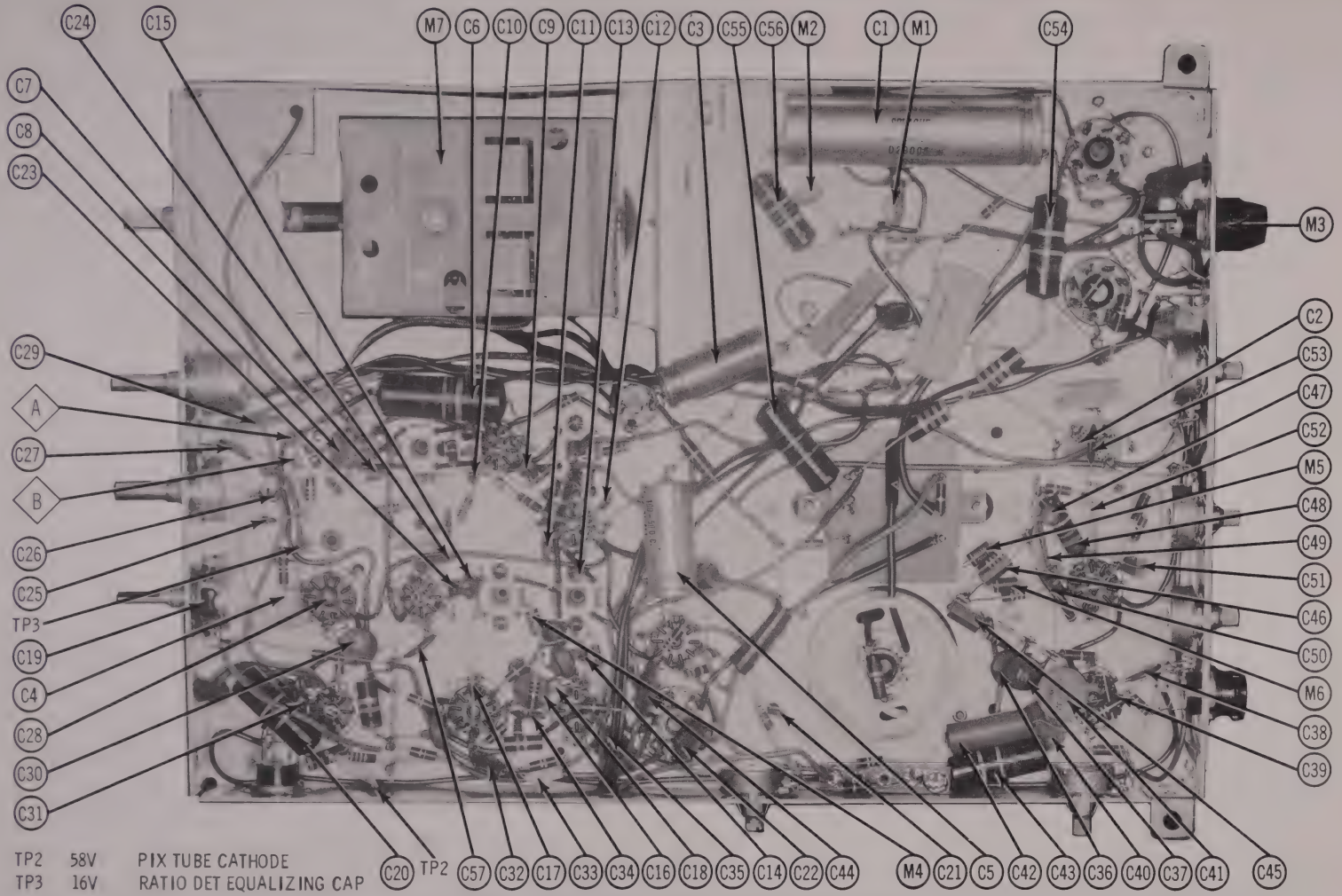
© Howard W. Sams & Co., Inc. 1960

VHF TUNER 57B48

SETCHELL-CARLSON MODELS TL60, 60C, 1760 (Ch. 260)



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	• CBS • GENERAL ELECTRIC USE	TYPE	ITEM No.	• RAYTHEON • SYLVANIA USE	TYPE
V1	1st Video IF Amp.	6BZ6	V8	Sync Sep. - Noise Limiter	6CB6
V2	2nd Video IF Amp.	6BZ6	V9	Vert. Mult	12AU7A
V3	3rd Video IF Amp.	6BZ6	V10	Vert. Output	6EM5 (6CM6)*
V4	Video Output - AGC Keying	6AW8A	V11	Horiz. Mult.	12AU7A
V5	Sound IF Amp.	6AU8	V12	Horiz. Output	6DQ6A
V6	Ratio Det. - AF Amp.	6BN8	V13	Damper	6AX4GT
V7	Audio Output	6AQ5A	V14	HV Rect	1GV2T/1B3GT

*Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: Setchell-Carlson PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V15	21CBP4A 17BJP4 24AFP4	21CBP4A ① 17BJP4 ① 24AFP4 ①	21CBP4-A ① 17BJP4 ① 24AFP4 ①	21CBP4/21CBP4A ① 17BJP4 ① 24AFP4 ①	21CBP4/21CBP4A ① 17BJP4 ① 24AFP4 ①	Aluminized ① Silver Screen "86"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA: Setchell-Carlson PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	200	300	D28005	PRI-075	BR30025	WS342	TD-200-300	TVA-1480	
C3A	140	350	D27438	AFH3-29-98	D0046			TVLS-3648 *	
B	140	350			BR10035				
C	430	350							
C3	30	150	D28909	PRS440	BBR20-150	TC45	TD-30-150	TVA-1410	
C4	5	50		PWT50005	ECS-50	TT50X3	ML5-50	TE-1303	
C5	100	50	D28413	PRS360	BR1005	TC3501	TD-100-50	TVA-1310	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	FILMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	.47	200V		P388N-47		CUB1P47	3DP-S-474	GEM-2047	2TM-P47
C7	1000			BPD-001	DD-102	BYA10B1	CCD-102	GP2D	5HK-D0
C9	10000			BPD-01	DD-103	BYA10B	CCD-103	GP1D	5HK-S0
C9	1000			BPD-001	DD-102	BYA10D1	CCD-102	GP2D	5HK-D0
C10	10000			BPD-01	DD-103	BYA10B	CCD-103	GP1D	5HK-S0
C11	1000			BPD-001	DD-102	BYA10D1	CCD-102	GP2D	5HK-D0
C12	1000			BPD-001	DD-102	BYA10D1	CCD-102	GP2D	5HK-D0
C13	6.8	5%		NPO-6S 5	TCZ-6R8	C10Y5RC	CCTO-6R8	CNO-568	10TCC-V5R
C14	15	5%		NPO-2S 10	TCZ-10	C10Q2C	CCTO-100	CNO-410	10TCC-Q10
C15	56	10%		1469-000056	TCZ-56	2SR5Q56	CM-19B-560K	CNO-456	MS-456
C16	10000			BPD-01	DD-103	BYA10B1	CCD-103	GP1D	5HK-S0
C17	100	10%		NPO-2S 3 3	TCZ-3R3	C10Y2RC	CCTO-3R3	CNO-533	10TCC-V3S
C18	3.3	5%		1469-0003	TCZ-3R3	2SR3T1	CM-19B-101K	MCB2S5	MS-3S0
C19	56	10%		1469-000056	TCZ-56	2SR5Q56	CM-19B-560K	CNO-456	MS-456
C20	.1	400V		P488N-1	DF-104	CUB4P1	4DP-S-104	GEM-401	4TM-P1
C21	1000			BPD-001	DD-102	BYA10D1	CCD-102	GP2D	5HK-D0
C22	5000	300V		BPD-005	DD-502	BYA10D5	CCD-502	GP2D	5HK-D50
C23	56	10%		1469-000056	TCZ-56	2SR5Q56	CM-19B-560K	CNO-456	MS-456
C24	10000			BPD-01	DD-103	BYA10B1	CCD-103	GP1D	5HK-S0
C25	1000			BPD-001	DD-102	BYA10D1	CCD-102	GP2D	5HK-D0
C26	10000			BPD-01	DD-103	BYA10B1	CCD-103	GP2D	5HK-D0
C27	10000			BPD-01	DD-103	BYA10B1	CCD-103	GP1D	5HK-S0
C28	1000			BPD-001	DD-102	BYA10D1	CCD-102	GP2D	5HK-D0
C29	4700	10%		D6-4700		PMS1D47	CCD-472	JL-347	10TB-D47
C30	10000			BPD-01	DD-103	BYA10B1	CCD-103	GP1D	5HK-S0
C31	1000			BPD-001	DD-102	BYA10D1	CCD-102	GP2D	5HK-D0
C33	10000			BPD-01	DD-103	BYA10B1	CCD-103	GP1D	5HK-S0
C33	270	10%		1469-00027	TCZ-270	2SR3T27	CM-19B-27K	CNO-327	MS-327
C34	10000			BPD-01	DD-103	BYA10B1	CCD-103	GP1D	5HK-S0
C35	10000		Note 1	BPD-01	DD-103	BYA10B	CCD-103	GP1D	5HK-S0
C36	10000			BPD-01	DD-103	BYA10B	CCD-103	GP1D	5HK-S0
C37	10000			BPD-01	DD-103	BYA10B	CCD-103	GP1D	5HK-S0
C38	10000			BPD-01	DD-103	BYA10A	CCD-103	GP1D	5HK-S0
C39	10000			BPD-01	DD-103	BYA10A	CCD-103	GP2D	5HK-D0
C40	30000			BPD-03	DD-303	BYB5S3	CCD-303	GP1D	5HK-S0
C41	4700	10%		D6-4700		PMS1D47	CCD-472	JL-347	10TB-D47
C42	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C43	1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C44	30000			BPD-03	DD-303	BYB5S3	CCD-303	GP1D	5HK-S0
C45	100	10%		1469-0001	TCZ-100	2SR3T1	CM-19B-101K	MCB2S5	MS-3S0
C46	100	10%		1469-0001	TCZ-100	2SR3T1	CM-19B-101K	MCB2S5	MS-3S0
C47	1000			BPD-001	DD-102	BYA10D1	CCD-102	GP2D	5HK-D0
C48	3033	400V 10%		V34C4033-10%		PMS1S3	6DP-1-332	JL-233	6TM-D33
C49	5000			BPD-005	DD-502	BYA10D5	CCD-502	GP2D	5HK-D50
C50	30000			BPD-03	DD-303	BYB5S3	CCD-303	GP1D	5HK-S0
C51	270	10%	(680mmf) †	1469-00027	TCZ-270	2SR3T27	CM-19B-27K	CNO-327	MS-327
C52	680	10%		1469-00068		1R5T68	CM-19B-68K	MCJ249	MS-368
C53	10000			BPD-01	DD-103	BYA10B1	CCD-103	GP1D	5HK-S0
C54	1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C55	1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C56	.047	400V 10%	Note 1	V34C4847-10%		PM4S47	4DP-3-473	GEM-1625	4TM-S47
C57	10000		Note 1	BPD-01	DD-103	BYA10B1	CCD-103	GP1D	5HK-S0

Note 1. May not be used in some versions. † Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA: Setchell-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5meg	½	817	B-S8	A47-5meg-Z	Q3-141	U85	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2	15K	½	811	BT-154 *		Q3-115XX *	UT-153	Contrast
	50000tap							
R3A	100K	½	816	B-S0-S	A47-500K-Z	Q3-133	U48	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWT-12	Y6-1	U3-36	Power Off-On
R4A	3.5meg	½	803	BX-S3	A47-3.5meg-S	B11-329	SU-565	Brightness
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	
R5A	2.5meg	½	803	BX-S3	A47-2.5meg-S	B11-329	SU-566	Horiz. Hold
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	
R6A	2.5meg	½	803	BX-S3	A47-2.5meg-S	B11-329	SU-565	Vert. Hold
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	
R7A	2.5meg	½	803	BX-S3	A47-2.5meg-S	B11-329	SU-566	Height, Bottom
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	
R8A	3000Ω	½	801B	AB-8	B47-3000-S	B11-112	SU-8	Height, Top (Vert. Lin.)
B	Shaft			AK-1	Not Req.	SK5	Not Req.	

* Do not use 10K TAP.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R9	220K	
R10	470Ω	
R11	220K	
R12	180Ω	
R13	820Ω	
R14	4700Ω	6800Ω *
R15	470Ω	
R16	82Ω	
R17	4700Ω	6800Ω *
R18	5600Ω 2W	
R19	180Ω	
R20	4700Ω	
R21	47K	
R22	1meg	
R23	10K 1W	
R24	1200Ω	
R25	470K	
R26	470K	100K *
R27	10K	
R28	180Ω	
R29	47K	
R30	4.7meg	
R31	22K	
R32	1meg	
R33	15K	

ITEM No.	RATING	REMARKS
R34	330Ω 1W	
R35	10K	
R36	22K 1W	Note 1
R37	2.2meg	
R38	22K	
R39	220K	
R40	22K	
R41	2.2meg	
R42	47K	22K *
R43	4700Ω	
R44	820Ω	
R45	4700Ω	
R46	220K	
R47	470K	
R48	1meg	
R49	4.7meg	2.2meg *
R50	47K	
R51	470Ω	
R52	470Ω	
R53	470Ω	
R54	820Ω	
R55	100K	220K *
R56	2.2meg	Note 1
R57	470K	
R58	470K	

ITEM No.	RATING	REMARKS
R59	1meg	
R60	100K	
R61	100K	47K *
R62	1200Ω	
R63	220K	68K *
R64	130K	150K *
R65	2.2meg	1meg *
R66	22K	15K *
R67	1meg	
R68	15K	22K *
R69	22Ω	22Ω *
R70	33K 2W	
R71	33K 2W	
R72	3900Ω	
R73	22Ω	
R74	2.2Ω	
R75	200Ω 10W	
R76	2000Ω 5W	
R77	4000Ω 1W	
R78	10K	
R79	2Ω 5W	
R80	220K	Note 1
R81	3Ω 10W	(Fusible Type)
R82	470Ω	

* Alternate Value. Note 1. May not be used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Setchell-Carlson PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	1st Video IF		17-5004	17-5004				
L2	2nd Video IF		17-5004	17-5004				
L3	3rd Video IF		17-5004	17-5004				
L4A	41.25MC Trap							
B	Sound IF							
L5	RF Choke							12uh
L6	Shunt Peaking Coil		19-4400	19-4400	TV-202	6136		400uh
L7	Series Peaking Coil		19-4400	19-4400	TV-202	6136		400uh
L8	Ratio Det.		17-3497	17-3497	TV-115	6305	SD-4	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA: Setchell-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.1A	198V @ .86A	8V @ .8A Tap @ 6.3V @ 7.5A	M1018AOU						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: Setchell-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Output		26313	A-2852 ①			VO-100 ①	26313	A-142X
T3	Yoke-Horiz. (30MH) (90)-Vert. (37MH)		Y-16 ②	MDF-92 ③ ③	Y90F19/43 ③	PCM2045 ② ③	DY-16A ② ②	Y-16 ②	Y-41 & YC-112 & NW-20
	Rear Cover and Centering Device								
T4	Horiz. Output								

① Drill new mounting hole(s).
② Requires new rear cover, centering device, and yoke clamping device.
③ Remove horizontal damping network from yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: Setchell-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	6600Ω	3-4Ω	S1038-8CAO							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA: Setchell-Carlson PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω		6AL5	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA: Setchell-Carlson PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.180A	*	5E4 *	HA504 *	40K *	SR500 *	* Silicon Type
M2	.190A	*	5E4 *	HA504 *	40K *	SR500 *	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: Setchell-Carlson PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No. FUSE	HOLDER
M3	3AG	2A 250V			312002 (3AG 2A 250V)	343001	AGC2	HKP

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: Setchell-Carlson PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M4	1N60		1N60	1N60	1N60	Video Det. (Pigtail)
M5	1N60		1N60	1N60	1N60	Horiz. AFC (Pigtail) } Matched Pair
M6	1N60		1N60	1N60	1N60	Horiz. AFC (Pigtail) }

MISCELLANEOUS

ITEM No.	PART NAME	REPLACEMENT DATA: Setchell-Carlson PART No.	NOTES
M7	Tuner	57-B-48	VHF (Standard Coil Replacement Part #GG-4290A)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8688 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8465 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

SETCHELL-CARLSON MODELS TL60, 60C, 1760 (Ch. 260)

FOLDER 1

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V201	RF Amplifier	6BC8
V202	Mixer-Osc.	6CL8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	4 NPO				C10V4C			10TCC-V39
C202	1.8				C10V2C			10TCC-V18
C203	1000		EF-001	MFT-1000		CCF-102	CT280A	
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205	9		NPO-DI 10	DTZ-10	C10V9C	CCTO-100	CNO-410	10TCC-Q10
C206	.33							
C207	.39							
C208	1.3		NPO-DI 1.5	DTZ-1.5	C10V15C		CNO-515	10TCC-V12
C209	47		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C210	1000		EF-001	MFT-1000		CCF-102	CT280A	
C211	1.5		NPO-DI 1.5	DTZ-1.5	C10V15C		CNO-515	10TCC-V15
C212	15		DI-15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C213	1000		EF-001	MFT-1000		CCF-102	CT280A	
C214	1000		DI-1000	DD-102	BYA10DI	CCD-102	GP210	10TS-D10
C215	1000		EF-001	MFT-1000		CCF-102	CT280A	
C216	2		NPO-DI 2.2	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C217	1.5 N220							
C218	10 NPO		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C219	1000		DI-1000	DD-102	BYA10DI	CCD-102	GP210	10TS-D10
C220	1000		DI-1000	DD-102	BYA10DI	CCD-102	GP210	10TS-D10
C221	10000		DI-10000	DD-103	BYA10SI	CCD-103	GP110	10TS-S10
C222	100		EF-0001	MFT-100				
C223								

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	8200Ω	
R202	4.7meg	
R203	470K	
R204	10K	
R205	220K	
R206	2200Ω	
R207	15K	
R208	4700Ω	

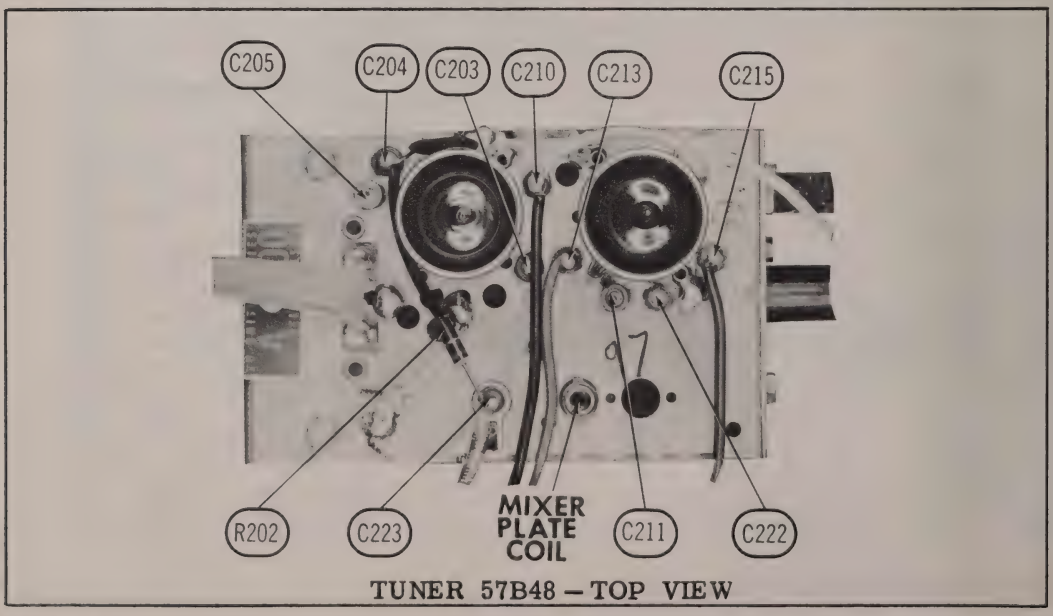
TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ALIGNMENT

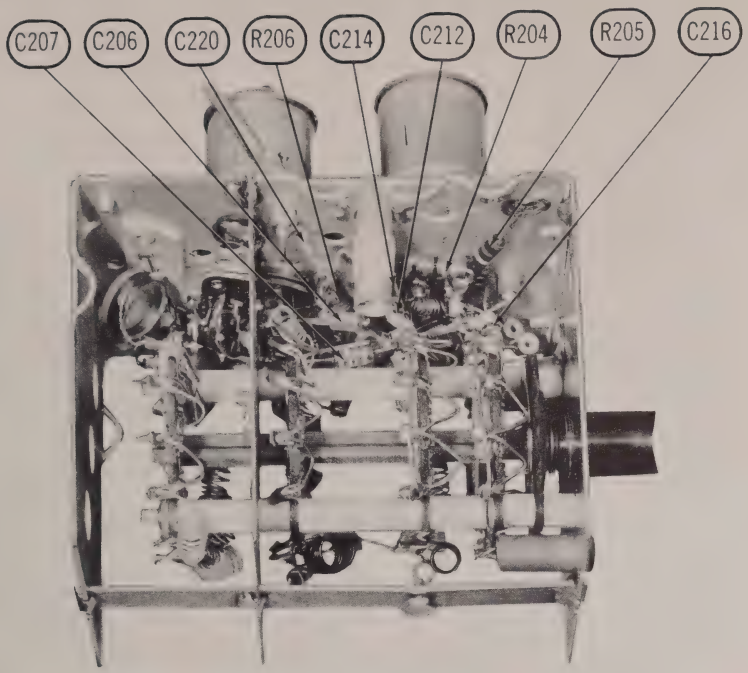
Set the Fine Tuning at the center of its range. One slug for HIGH band adjustment is located at 1 o'clock, and should be adjusted first. The LOW band adjustment is located at 6 o'clock. Adjust for best picture and sound.

RF AND MIXER ALIGNMENT

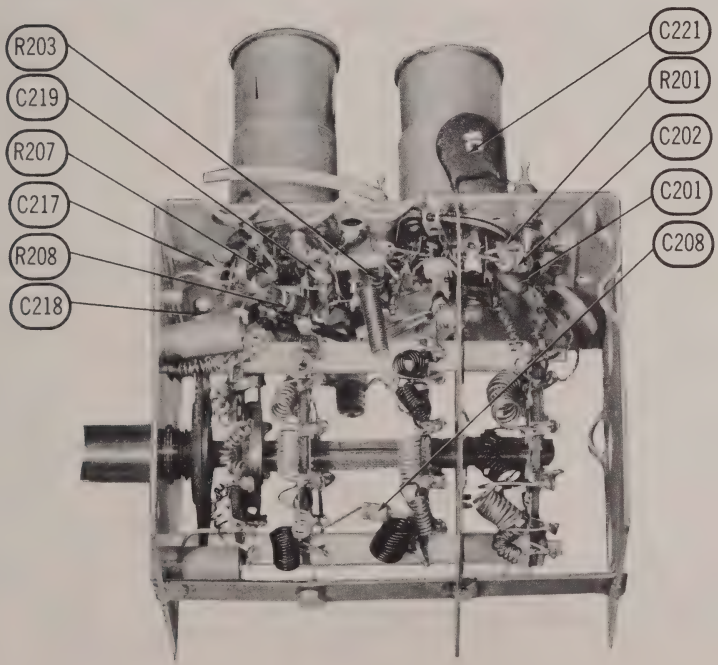
This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



TUNER 57B48 – TOP VIEW



TUNER 57B48 - LEFT SIDE

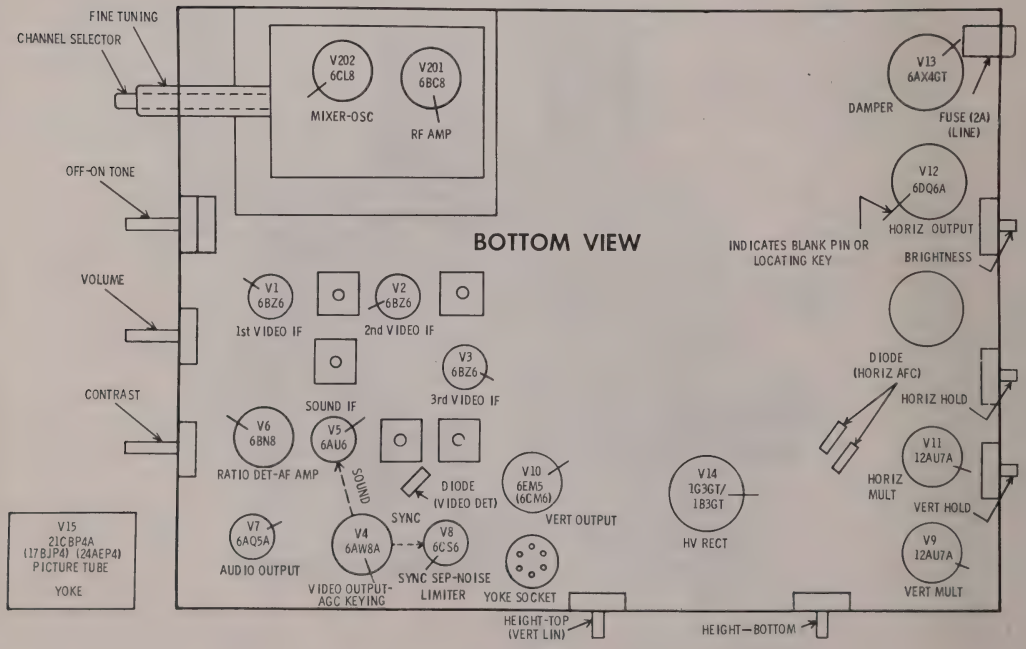


TUNER 57B48 - RIGHT SIDE

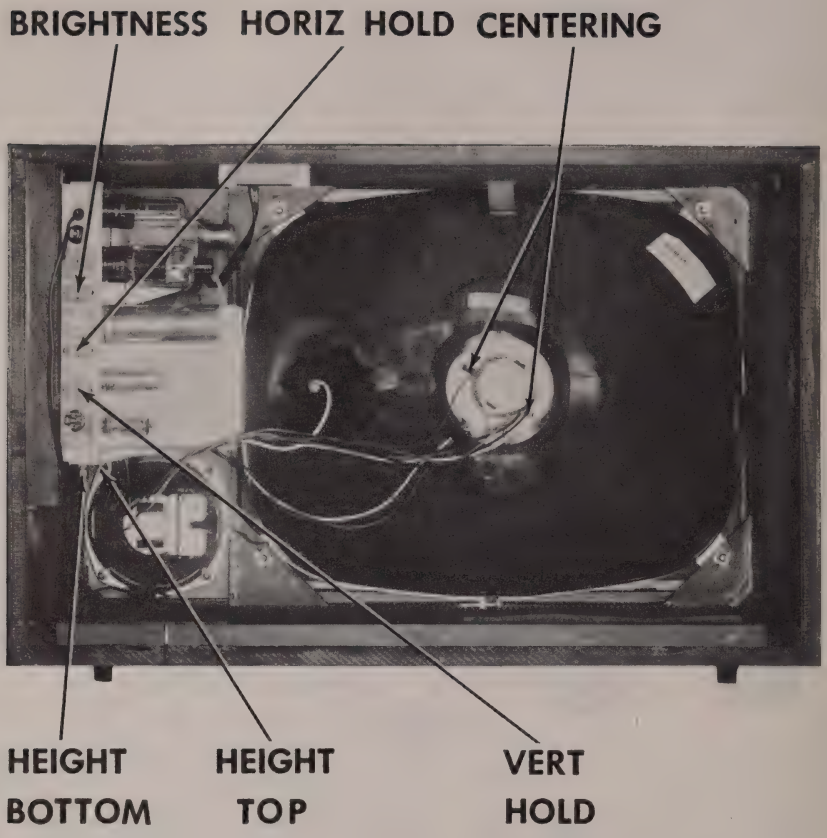
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	220K	820Ω	0Ω	.2Ω	▲180Ω	▲180Ω	820Ω		
V2	6BZ6	▲.3Ω	▲82Ω	.2Ω	0Ω	†670Ω	†670Ω	§11K		
V3	6BZ6	.3Ω	180Ω	.2Ω	0Ω	†5800Ω	†5800Ω	180Ω		
V4	6AW8A	§1500Ω	§11K	440K	.2Ω	0Ω	0Ω	1meg	§11K	†5500Ω
V5	6AU6	470K	0Ω	.2Ω	0Ω	§22K	§22K	0Ω		
V6	6BN8	5meg	22K	5meg	.2Ω	0Ω	0Ω	†500K	4.7meg	0Ω
V7	6AQ5A	1meg	330Ω	0Ω	.2Ω	†2400Ω	†2000Ω	1meg		
V8	6CS6	†2.2meg	0Ω	0Ω	.2Ω	§45K	§24K	2.4meg		
V9	12AU7A	†●2meg	●1.2meg	4700Ω	.2Ω	.2Ω	†220K	13K	4700Ω	0Ω
V10	6EM5	†400Ω	NC	4.7meg	.2Ω	0Ω	4.7meg	●800Ω	NC	†725Ω
V11	12AU7A	†100K	1.5meg	1200Ω	0Ω	0Ω	†120K	220K	1200Ω	.2Ω
V12	6DQ6A	TP	0Ω	NC	†66K	1meg	NC	.2Ω	0Ω	TOP CAP †32Ω
V13	6AX4GT	NC	NC	¶	NC	†200Ω	TP	0Ω	.2Ω	
V14	1G3GT/ 1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †257Ω
V15	21CBP4A	3.3Ω	110K	Pin 6 †200Ω	Pin 10 †14Ω	Pin 11 ●750K	Pin 12 .2Ω			
V201	6BC8	†670Ω	INF	INF	.2Ω	0Ω	INF	2.4meg	0Ω	0Ω
V202	6CL8	15K	§6200Ω	0Ω	.2Ω	0Ω	§3700Ω	§1500Ω	0Ω	230K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 7 OF V2.
† MEASURED FROM OUTPUT OF M1.
‡ MEASURED FROM PIN 3 OF V13.
§ MEASURED FROM 140V. SOURCE.
NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station. Adjust the Horizontal Hold until the picture synchronizes horizontally. If the control must be turned to either extreme to sync the picture, or if slow warm-up causes frequency drift, replace the Horizontal Multivibrator Tube and readjust the Horizontal Hold Control.

PHOTOFACT® Folder with CIRCUITRACE®

ZENITH CHASSIS 18D20, Q, U, 18E20, Q, U, S-48433, S-48434

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ZENITH CHASSIS 18D20, Q, U, 18E20, Q, U, S-48433, S-48434

MODEL E2755W (CHASSIS 18E20)

ZENITH CHASSIS 18D20, Q, U, 18E20, Q, U, S-48433, S-48434

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

MODEL E2755W (CHASSIS 18E20)

TRADE NAME	Zenith	MODELS	CHASSIS
		E2747E, E2747M, E2747R, E2747W, E2755E, E2755R, E2755W, E2764W	18D20 or 18E20
		E2747EU, E2747MU, E2747RU, E2747WU, E2755EU, E2755RU, E2755WU, E2764WU	18D20U or 18E20U
		E3354E, E3354R, E3354W, E3356E, E3356H, E3356R, E3356W, E3360W	18D20Q or 18E20Q
		Remote Control Receiver - S-48433 Remote Control Receiver - S-48434	
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Avenue, Chicago 39, Illinois		
TYPE SET	Television Receiver (E3354 Series with Remote Control Ch. S-48433, E3356 & E3360 Series with Remote Control Ch. S-48434)		
TUBES	TV: VHF - Eighteen, UHF - Nineteen Remote Control Receiver S-48433: Six		
POWER SUPPLY	110-120 Volts AC, 60 Cycle Remote Control Receiver S-48434: Six		
RATING	240 Watts, 2.2 Amp. @ 117 Volts AC (Less Remote Control Receiver and UHF)		
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

The safety glass is an integral part of the picture tube.

FUSE

TV: A 5 Amp (AC Line) fuse is used for receiver protection and a .7 Amp fuse is used for B+ protection. (For location, see "Tube Placement Chart-Bottom View").
A fuse wire is used for filament protection. (For location, see M4 in Photo "Chassis - Bottom View".)
Remote Control Receiver: A 3/4 Amp S/B fuse is used for LV supply protection in both S-48433 & S-48434 receivers.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus control. (For location, see "Tube Placement Chart".)

SYNC STABILITY

Sync stability may be varied by means of a Fringe Lock control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, ssee "Tube Placement Chart".)

WIDTH

The width may be varied by a Widtu Coil. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

PINCUSHION CORRECTION

Reduce the picture size so that the sides of the raster are visible. Position the magnets so that all sides are straight.

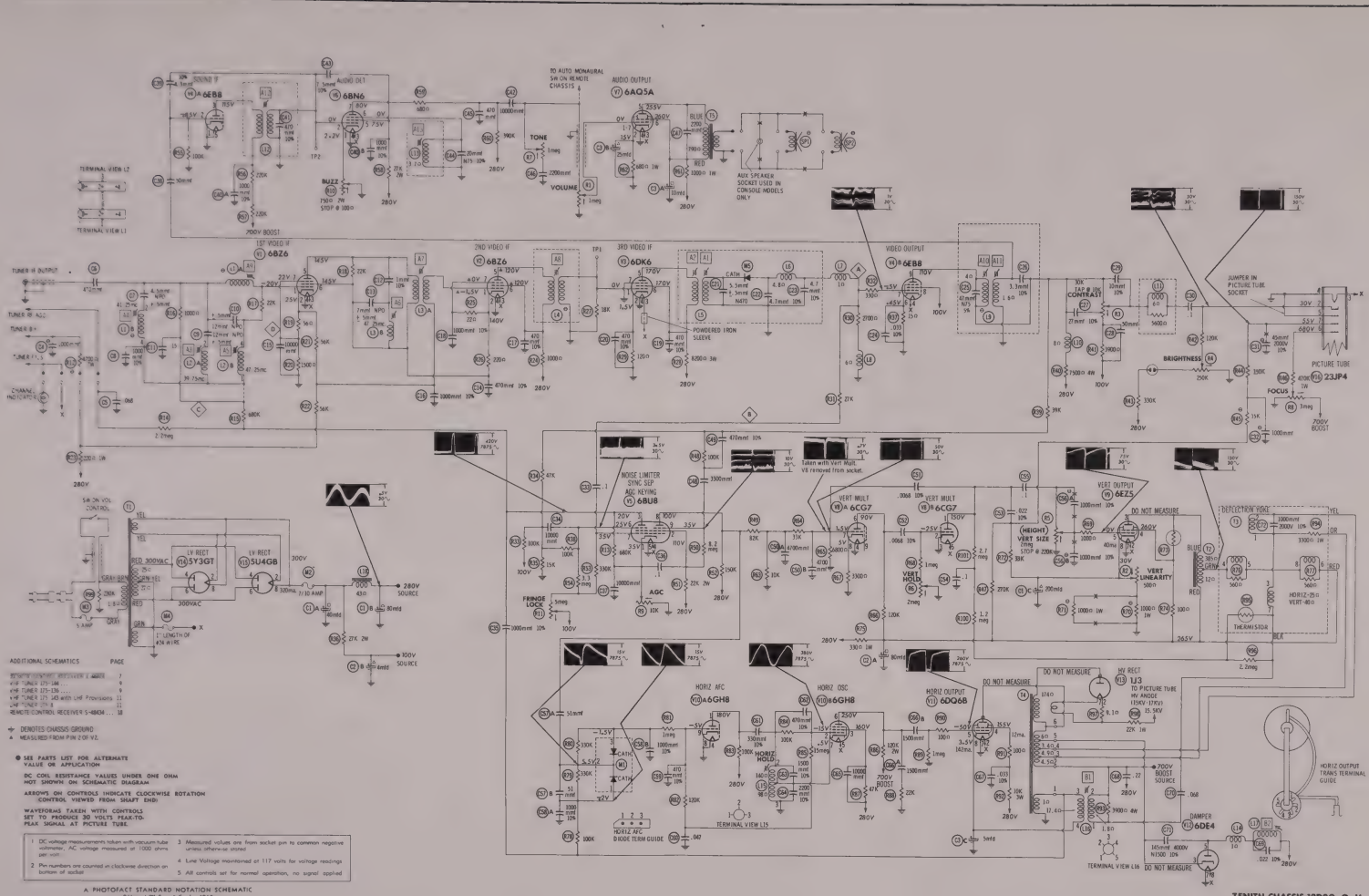
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KA93

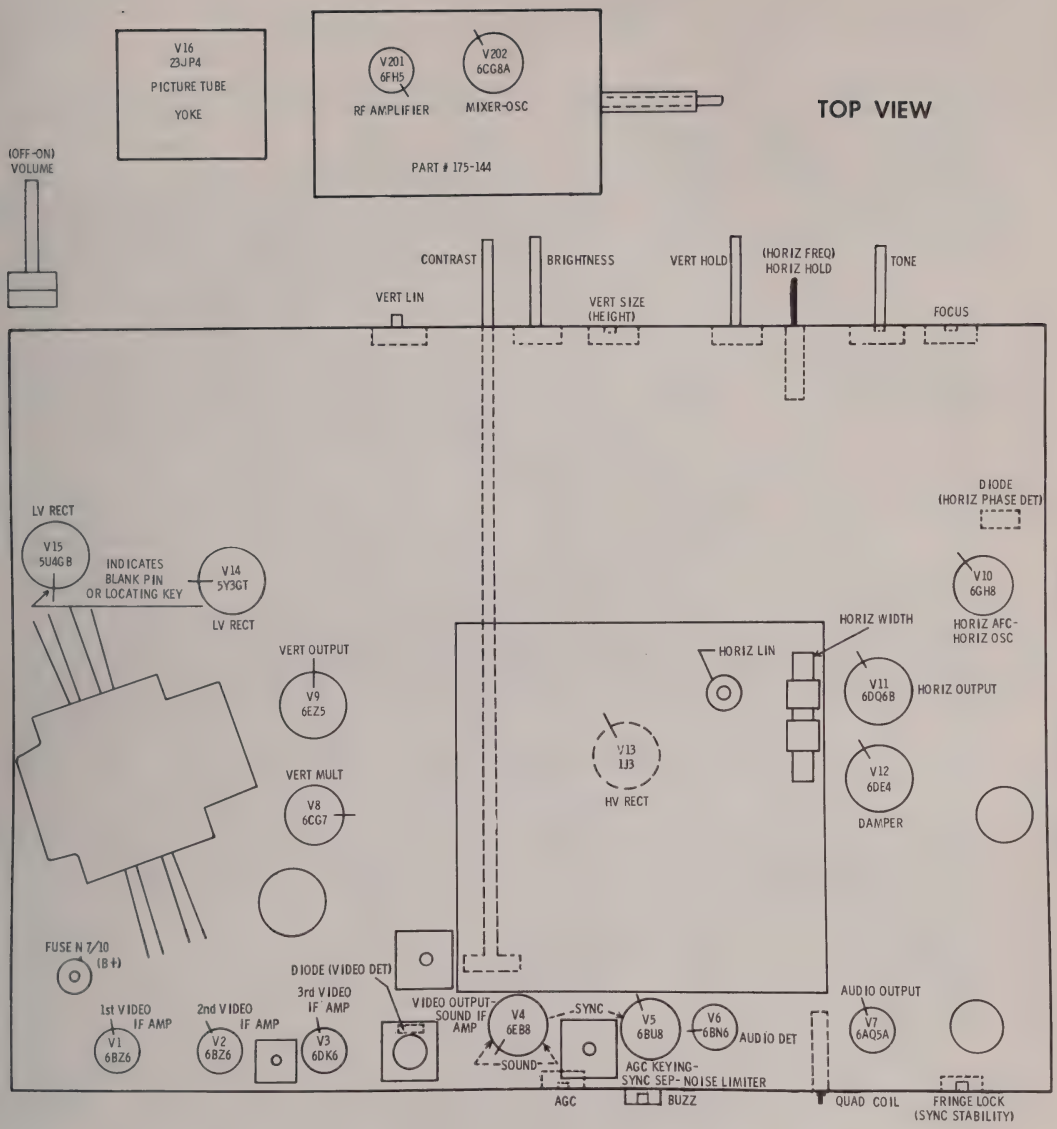
the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

ZENITH CHASSIS 18D20, Q, U, 18E20, Q, U, S-48433, S-48434

SET491 FOLDER 2


ZENITH CHASSIS 18D20, Q, U,
18E20, Q, U, S-48433, S-48434
FOLDER 2
PAGE 2
PAGE 23
ZENITH CHASSIS 18D20, Q, U,
18E20, Q, U, S-48433, S-48434
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1960
ADDITIONAL SCHEMATICS PAGE
DENOTES CHASSIS GROUND
MEASURED FROM PIN 2 OF V2.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured on 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
TERMINAL VIEW L2
TERMINAL VIEW L1
TERMINAL VIEW L15
TERMINAL VIEW L16
HORIZ AFC DIODE TERM GUIDE
HORIZ OUTPUT TRANS TERMINAL GUIDE
TO AUTO MONAURAL SW ON REMOTE CHASSIS
AUX SPEAKER SOCKET USED IN CONSOLE MODELS ONLY
POWERED IRON SLEEVE
Taken with Vert Mult. V8 removed from socket.
DO NOT MEASURE
TO PICTURE TUBE HV ANODE (15KV - 17KV)
PICTURE TUBE 23JP4
JUMPER IN PICTURE TUBE SOCKET
THERMISTOR
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6DK6
VIDEO OUTPUT V4 6EB8
AUDIO OUT V5 6BN6
AUDIO OUTPUT V7 6AQ5A
SOUND IF V6 6EB8
NOISE LIMITER SYNC SEP. AGC KEYING V5 6BU8
VERT MULT V8 6CG7
VERT MULT V8 6CG7
VERT OUTPUT V9 6EZ5
HORIZ AFC V10 6GH8
HORIZ OSC V10 6GH8
HORIZ OUTPUT V11 6DQ6B
DAMPER V13 6DE4
RECT V12 1J3
LV RECT V13 5Y3GT
LV RECT V13 5U4GB
TUNER I-F OUTPUT
TUNER R-F
TUNER A.G.C.
TUNER B+
CHANN. INDICATOR
SW ON VOL CONTROL
TONE
VOLUME
BUZZ
700V BOOST
CONTRAST
BRIGHTNESS
FOCUS
VERT LINEARITY
VERT SIZE
VERT HOLD
HORIZ HOLD
FRINGE LOCK
AGC
280V SOURCE
300V SOURCE
300VAC
700V BOOST SOURCE
1" LENGTH OF 4/N WIRE
ADDITIONAL SCHEMATICS PAGE
REMOTE CONTROL RECEIVER S-48434 ... 18

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (Line), V14, V15, Fuse (B+), Fuse (Fil.)

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V16
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, V14, V15
Vert. off freq. V8
Horiz. off freq. Diodes (Horiz. Phase Det), V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5, Diodes (Horiz. Phase Det.)
No vert. or horiz. sync V5

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A13 .... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru 470mmf to TP-1. Low side to chassis. Connect a 56Ω carbon resistor across sweep output.	44MC (10MC Swp.)	39.75MC 41.25MC 45.75MC	Between any two channels	Vert. Amp. thru 10K to point (A). Low side to chassis. (Across Video Det. load.)	A1, A2	Set sweep generator output to produce 3 volts peak to peak on scope. Adjust A1 and A2 alternately for maximum gain and symmetry with the 45.75MC marker positioned as shown in Fig. 1. The 39.75MC marker can fall within ±.5MC of the specified frequency. If the desired response cannot be obtained, check to see that the cores are entering their respective windings from opposite ends of the coils.
2.	High side to ungrounded tube shield floating over Mixer-Osc. Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A3, A4, A5, A6	Connect a clip lead from point (B) to chassis. Connect a clip lead from point (C) to point (D). Use high scope gain and adjust A3 thru A6 for MINIMUM marker amplitudes as in Fig.2 A3 controls 39.75MC marker, A4 controls 41.25MC marker, and A5 and A6 control the 47.25MC marker.
3.	"	"	41.25MC 42.75MC 45.0MC 45.75MC	"	"	A7, A8, A9 and Mixer Plate Coil	Remove clip lead from point (D) and connect to chassis. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A7 affects low side of curve and A8 affects the high side. Remove clip leads.

SOUND IF ALIGNMENT

Connect an adjustable attenuator between the antenna and the receiver antenna terminals. Tune in a TV station and adjust the attenuator until the signal is below the limiting level of the Audio Detector as evidenced by a hiss similar to super-regeneration in the sound. Adjust A10, A11, A12, and A13 for maximum sound of best quality. Adjust the Buzz Control for MINIMUM buzz.
If the hiss disappears during alignment, further reduce the signal level until the hiss returns.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 8

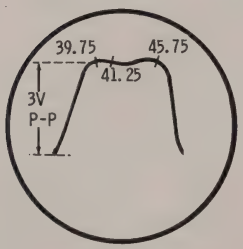


FIG.1

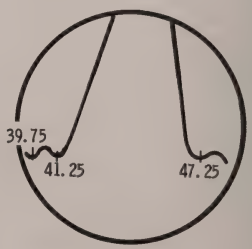


FIG.2

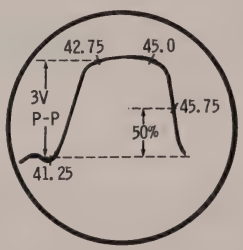


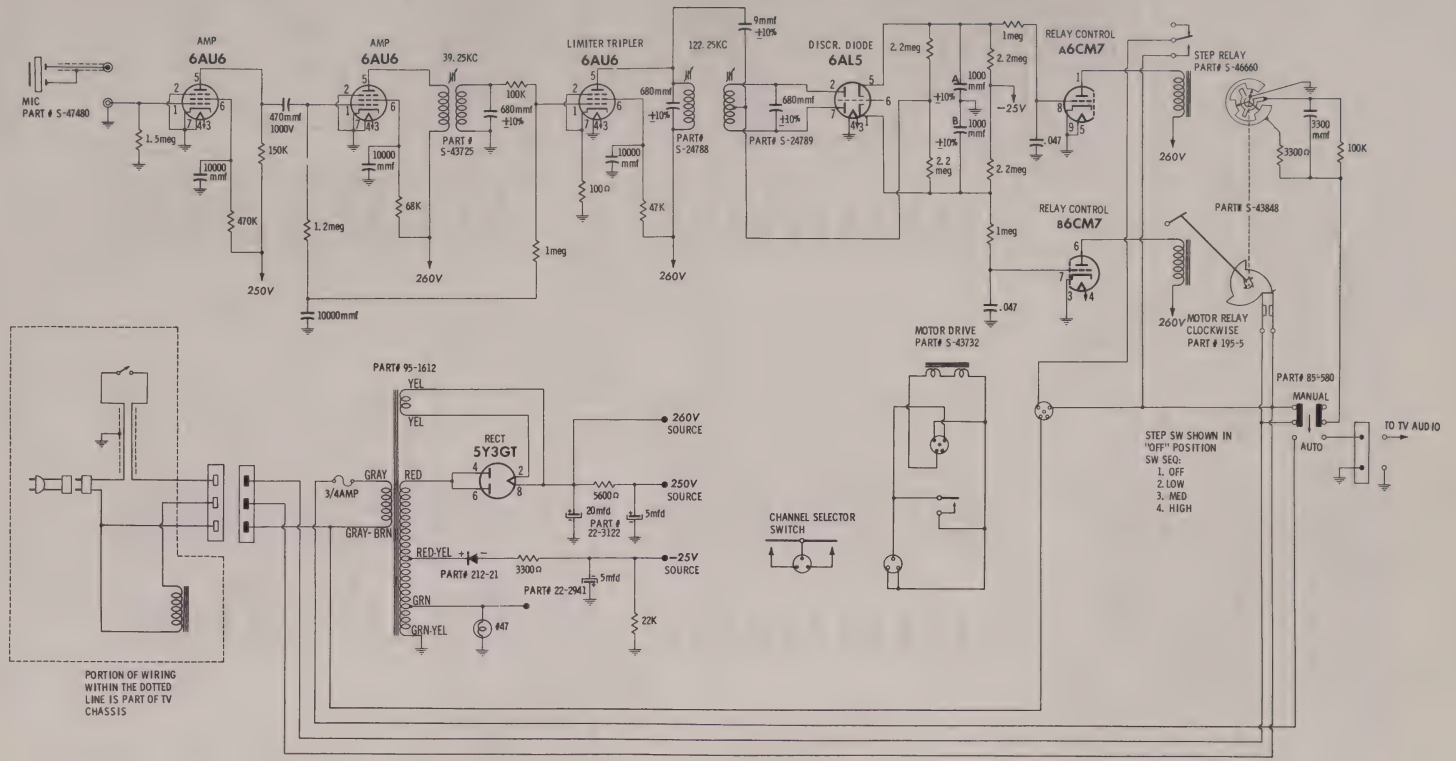
FIG.3

CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

ZENITH CHASSIS 18D20, Q, U,
18E20, Q, U, S-48433, S-48434

CHASSIS BOTTOM VIEW – CAPACITOR & MISC. IDENT.

TP2 0V AUDIO DET GRID



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1960

REMOTE CONTROL RECEIVER S-48433

ZENITH CHASSIS 18D20, Q, U,
18E20, Q, U, S-48433, S-48434

TUNER ALIGNMENT INSTRUCTIONS

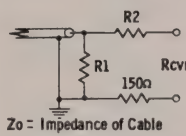
PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A203 ... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525
A216 thru A227 ... GENERAL CEMENT #8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point ⊕. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru matching transformer (Fig. 201).	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point ⊕. Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	



Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG. 201

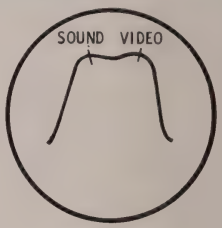


FIG. 202

VHF OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Fig. 201	Across antenna terminals thru matching transformer (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Detector load.	A216	Adjust to place sound marker in trap notch as in Fig. 203. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

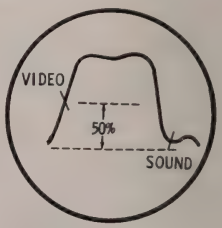
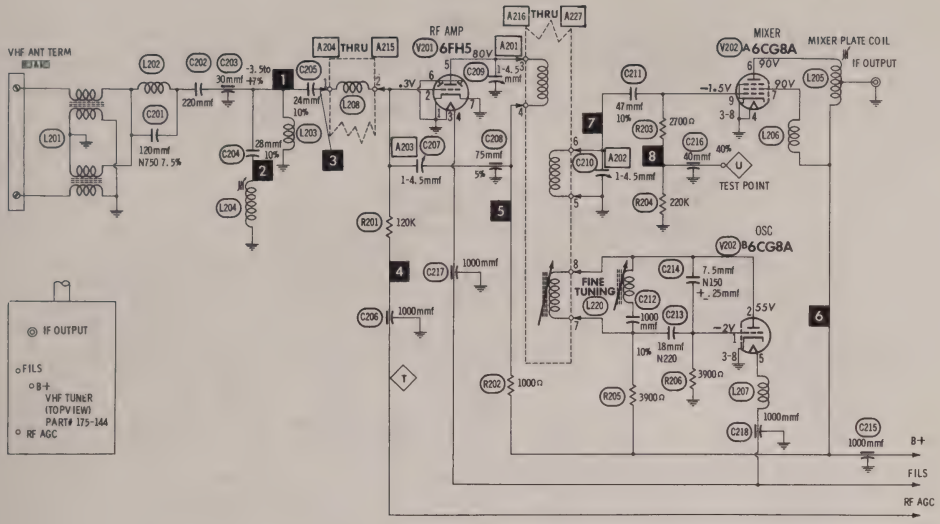


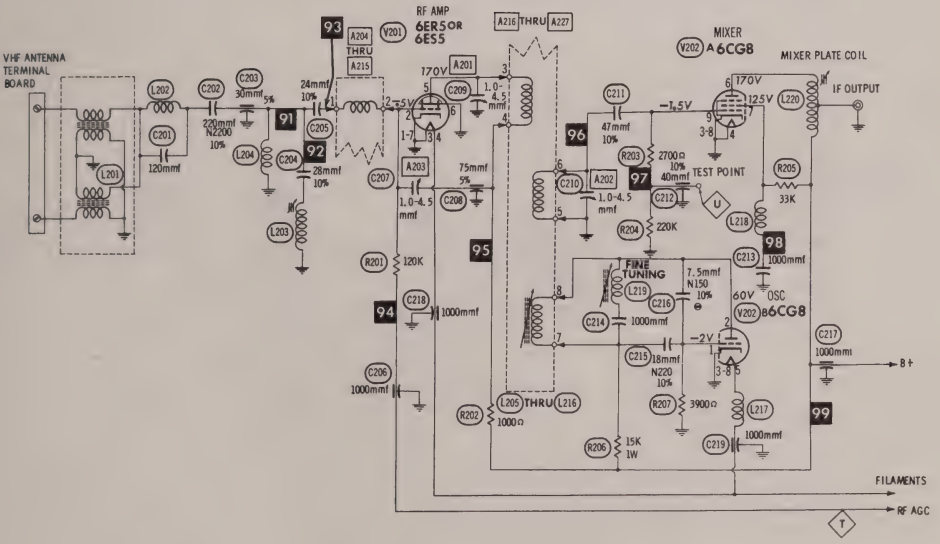
FIG. 203



A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

©Howard W. Sams & Co., Inc. 1960

VHF TUNER 175-144



A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

©Howard W. Sams & Co., Inc. 1960

VHF TUNER 175-136

TUNER PARTS LIST AND DESCRIPTIONS

175–144

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6FH5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120 N750 7.5%			TCZ-120	C10T12U	CCTN-121	CN7-312	10TCU-T12
C202	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C203	30 -3.5% +7%	#22-3111						
C204	28 10%			TCZ-27	C10Q27C	CCTO-270	CNO-327	10TCC-Q27
C205	24 10%		NPO-DI 25	DTZ-25	C10Q24C	CCTO-240	CNO-325	10TCC-Q25
C206	1000		EF-001	MFT-1000		CCF-102	CT280A	
C207	1-4.5			829-6		CV-3	CT552	
C208	75 5%	#22-3147						
C209	1-4.5			829-6		CV-3	CT552	
C10	1-4.5			829-6		CV-3	CT552	
C211	47 10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C212	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C213	18 N220 10%	#22-3025				*		10TCR-Q18
C214	7.5 N150 ±.25mmf	#22-3026						
C215	1000		EF-001	MFT-1000		CCF-102	CT280A	
C216	40 40%	#22-3112						
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	

Zenith Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	120K	
R202	1000Ω	

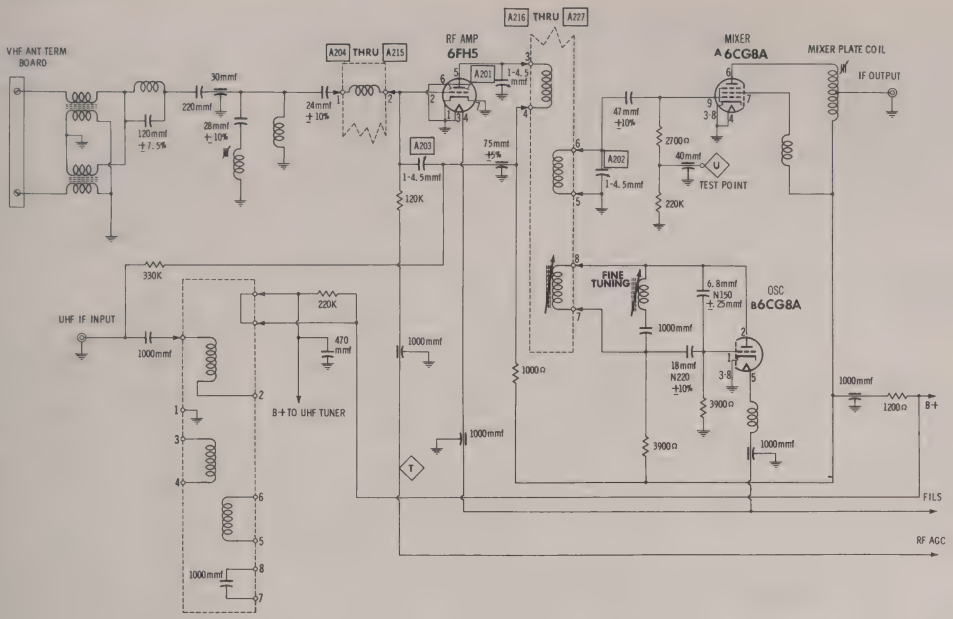
ITEM No.	RATING	REMARKS
R203	2700Ω	
R204	220K	

ITEM No.	RATING	REMARKS
R205	3900Ω	
R206	3900Ω	

COILS (RF-IF)

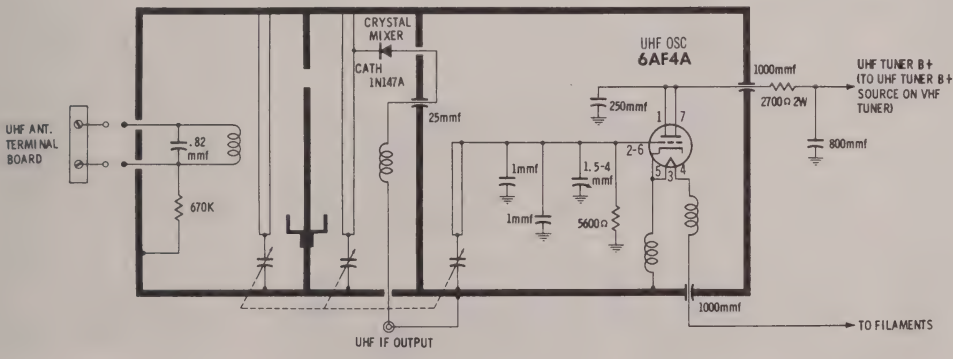
ITEM No.	USE	ZENITH PART No.	NOTES
L201	Ant. Trans. Assy.	S-41511	
L202	RF Choke	20-657	
L203	RF Choke	20-756	
L204	Trap Coil	S-40497	
L205	Mixer Plate Coil	S-45638	
L206	RF Choke	20-721	
L207	Fil. Choke	20-734	
L208	Ant., RF, Mixer Grid, Osc. Coils	174-2	Channel 2
L209	"	174-3	Channel 3
L210	"	174-4	Channel 4
L211	"	174-5	Channel 5
L212	"	174-6	Channel 6

ITEM No.	USE	ZENITH PART No.	NOTES
L213	Ant., RF, Mixer Grid, Osc. Coils	174-7	Channel 7
L214	"	174-8	Channel 8
L215	"	174-9	Channel 9
L216	"	174-10	Channel 10
L217	"	174-11	Channel 11
L218	"	174-12	Channel 12
L219	"	174-13	Channel 13
L220	Fine Tuning Coil	S-43559	Assembly



A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1960

VHF TUNER WITH UHF PROVISIONS - 175-143



A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1960

UHF TUNER 175-8

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	CBS	GENERAL ELECTRIC	RAYTHEON	SYLVANIA	USE
V1	1st Video IF Amp.	6BZ6	6CQ7		
V2	2nd Video IF Amp.	6BZ6	6EZ5		
V3	3rd Video IF Amp.	6DK6	6GH8		
V4	Video Output - Sound IF Amp.	6EB8	6CG8		
V5	AGC Keying - Sync Sep. - Noise Limiter	6BU8	6DE4		
V6	Audio Det.	6BW6	5Y3GT		
V7	Audio Output	6AQ5A	5U4GB		
V8	Vert. Blank.			6CG7	
V9	Vert. Output			6EZ5	
V10	Horiz. AFC - Horiz. Osc.			6GH8	
V11	Horiz. Output			6DQ6B	
V12	Damper			6DE4	
V13	HV Rect.			1J3	
V14	LV Rect.			5Y3GT	
V15	LV Rect.			5U4GB	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: ZENITH PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V16	23JP4				23JP4 ①	① Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	400	23-3336	AFH3-123	CG890	FP333.3	TMT-109	TVL-3684	
B	40	400							
E	300	50							
C2A	80	400	23-3344					TVL-1702	
B	44	300						TVA-1716	
C3A	40	400	23-3343	†AFH3-87 *PRS8310	CU83	FP333.7	TMT-136	TVL-3685	
B	35	25							
C	5	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	1000	Note 1	BPD-001	DD-102	BTA10D1	CCD-103	B-110	8HK-D10
C5	.068 200V		BPD-0068		CUB4S68	4DP-3-S33	GEM-4168	47M-D68
C6	470		BPD-00047	DD-471	BTA10T47	CCD-471	B-347	10TB-T47
C7	4.5 NPO ± .5mmf		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TC-V47
C8	1000 10%		DI-1000	DD-102	1R5IX	CCD-103	GP310	10TB-D10
C9	12 NPO ± .5mmf			TCZ-12	C10Q2C	CCTO-130	CNO-412	10TCC-Q12
C10	12 NPO ± .5mmf			TCZ-12	C10Q2C	CCTO-130	CNO-412	10TCC-Q12
C11	.15 300V		CUB2P15		CUB2P15	2DP-3-154	GEM-3015	3TM-P15
C12	1 10%		NPO-RI 1.0	TCZ-1			CNO-810	10TCC-V10
C13	7 NPO ± .5mmf		NPO-DI 8.6	DTZ-8R8	C10V7C	CCTO-6R8	CNO-868	10TCC-V68
C14	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TB-T47
C15	1000 10%		DI-1000	DD-102	BTA10D2	CCD-103	GP310	10TB-D10
C16	470 10%		1469-00047		5R5T47	CM-193-471K	MCJ344	MS-347
C17	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TB-T47
C18	.5 .75 NPO ± .5mmf	#22-332				*		
C19	4.7 10%		NPO-DI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-Q47
C20	4.7 10%		NPO-DI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-Q47
C21	.033 200V 10%		Y5V-DI .033		PM4S33	4DP-3-S33		6TM-S33
C22	47 Y5V 0%	#23-2407						
C23	3.3 10%		NPO-RI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C24	27 10%		NPO-RI 27	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C25	50		DI 50	DD-500	L10QS	CCD-500	GP450	10TB-Q50
C26	10 10%		NPO-RI 10	DD-100	L10QI	CCD-100	GP410	10TB-Q10
C29	.1 200V		DI-104	CUB4P1	4DP-3-104	2DP-3-104	EDP-3-104	3TM-P1
C31	45 3000V 10%	Note 1		HVA20Q47				
C31	1000	Note 2	BPD-001	DD-102	BTA10D1	CCD-103	B-110	8HK-D10
C32	400V		P468N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C34	10000		BPD-01	DD-103	BTA10D8	CCD-103	B-110	8HK-S10
C35	1000 10%		DI-1000	DD-102	1R5IX	CCD-103	GP310	10TB-D10
C36	400V		P468N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C37	10000		BPD-01	DD-103	BTA10D8	CCD-103	B-110	8HK-S10
C38	50		DI 50	DD-500	L10QS	CCD-500	GP450	10TB-Q50
C39	4.3 10%		NPO-RI 4.7	TCZ-4R7	C10V4C	CCTO-4R7	CNO-547	10TCC-T47
C40A	1000 10%		DI-1000	DD-102	P468N	CCD-103	GP310	10TB-D10
B	1000 10%		DI-1000	DD-103	P468N	CCD-103	GP310	10TB-D10
C41	470 10%		1469-00047		5R5T47	CM-193-471K	MCJ344	MS-347
C42	10000		BPD-01	DD-103	BTA10D8	CCD-103	B-110	8HK-S10
C43	7.5 10%		NPO-RI 6.8		C10V8C			10TCC-V82
C44	30 N75 10%	#23-2218						
C45	470		BPD-00047	DD-471	BTA10T47	CCD-471	B-347	10TB-347
C46	2200		BPD-0022	DD-222	BTA10D22	CCD-223	B-322	5HK-D22
C47	2200		BPD-0022	DD-222	BTA10D22	CCD-223	B-322	5HK-D22
C48	3300		BPD-0033	DD-332	BTA10D33	CCD-333	B-333	5HK-D33
C49	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TB-347
C50A	4700					CCD-472		
B	4700		BPD-DX0047	DD-503	BTD6DD8	CCD-472	BXE350	5HK-DD47
C51	.0068 400V 10%					P.MD6S8	6DP-1-682	GEM-16268
C52	.0068 400V 10%					P.MD6S8	6DP-1-682	GEM-16268
C53	.022 400V 10%					P.M4S22	4DP-2-S22	GEM-16122
C54	.1 600V			DF-104		CUB4P1	4DP-3-104	GEM-401
C55	.1 400V			DF-104		CUB4P1	4DP-3-104	GEM-401
C56A	1000 10%	Note 1	DI-1000	DD-102	1R5IX	CCD-103	GP310	10TB-D10
B	1000 10%		DI-1000	DD-103	1R5IX	CCD-103	GP310	10TB-D10
C57A	51		DI-50	DD-510	L10QS1	CCD-500	GP450	10TB-Q50
B	51		DI-50	DD-510	L10QS1	CCD-500	GP450	10TB-Q50
C58A	1000 10%		DI-1000	DD-102	1R5IX	CCD-103	GP310	10TB-D10
B	1000 10%		DI-1000	DD-103	1R5IX	CCD-103	GP310	10TB-D10
C59	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TB-T47
C60	.047 200V		P.M5R47	DD-503	CUB2P47	4DP-3-473	GEM-4147	3TM-S47
C61	330 10%		1469-00033		5R5T33	CM-193-331K	MCJ341	MS-333
C62	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TB-T47
C63	1500 10%		1464-0015		1R5IX5	CM-193-152K	MCJ496	MS-215
C64	2200 10%		1464-0022		1R5IX22	CM-193-222K	MCJ459	MS-222

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C65	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	8HK-S10
C66A	1500		BPD-DX0015	DD8-153	BYC6DD15	CCD-152	B2X315	5HK-3D15
B	1500					CCD-152		
C67	.033 400V 10%				FM4S33	4DP-3-333	GEM-4133	5TM-S33
C68	.33 600V				CUB6P33	6DP-5-334	GEM-6022	6TM-P33
C69	.022 300V 10%				PM4S22	4DP-3-223	GEM-16122	3TM-S22
C70	.068 600V				CUB6S68	6DP-4-683	GEM-6158	6TM-S68
C71	145 4000V N1500 10%	#22-2869						
C72	1000 2000V 10%	Note 3	HVD-30-1000	DD80-102				

Note 1. May not be used in some versions.
Note 2. Some versions may use component combination for C32 & R45 (Part #87-5).
Zenith Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 3. Part of T3.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	63-4681			B11-137	PP16L	Volume
B	Shaft					SR8	DS-37	
C	Switch					Not Req.	Not Req.	Push-Pull Off-On
R2A	500Ω	½	63-4636	AB-4	B47-500-S	B11-103	PTA52L	Vert. Linearity
B	Shaft			AK-1	Not Req.	TM4	Not Req.	
R3	50Ω 10K Tap	½	63-4689					Contrast
R4A	250K	½	63-4676	B-50	A47-250K-S	Q11-130	U46	Brightness
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R5A	2meg 220K Stop	½	63-4635	AB-75 *	B47-2meg-S*	B11-139 *	PTA28L *	Vert. Size (Height)
B	Shaft			AK-1	Not Req.	TM4	Not Req.	
R6A	2meg	½	63-4678	B-75	A47-2meg-S	Q11-139	U56	Vert. Hold
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R7A	1meg	½	63-4679	B-70	A47-1meg-Z	Q13-137	U53	Tone
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R8A	1meg	½	63-4655	AB-84	B47-2meg-S	B11-140	BU-59	Focus
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R9A	10K	½	63-4695	AB-14	B47-10K-S	B11-115	TA14L	AGC
B	Shaft			AK-1	Not Req.	TM4	Not Req.	
R10	750Ω 100Ω Stop	½(WW)	63-3284	WN-751 a	39-600 a	112-800 a	FL-750 a	Buzz
R11A	5meg	½	63-4012		B47-5meg-Z	B11-141	PTA56L	Fringe Lock (Sync Stability)
B	Shaft				Not Req.	TM54	Not Req.	

* Use 330K resistor in series with left hand terminal, view from shaft end terminals down.
a Use 100Ω series resistor.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R12	4700Ω TW	#63-4686 ①
R13	680K	
R14	2.2meg	
R15	680K	
R16	1000Ω	
R17	33K	
R18	22K	
R19	56Ω	
R20	1500Ω	
R21	56K	
R22	56K	
R23	220Ω 1W	
R24	1000Ω	
R25	22Ω	
R26	220Ω	
R27	18K	
R28	8200Ω 3W	
R29	120Ω	
R30	2700Ω	
R31	27K	
R32	330Ω	
R33	100K	
R34	47K	
R35	18K	
R36	27K 2W	
R37	15Ω	
R38	100K	
R39	39K	
R40	7500Ω 4W	
R41	3900Ω	
R43	120K	
R44	330K	
R45	150K	③
R46	15K	
R47	470K 1W	
R48	270K	
R49	100K	
R50	33K	
R51	8.2meg	
R52	22K 2W	
R53	150K	
R54	330K	
R55	3.3meg	
R56	100K	
R57	220K	
R58	27K 2W	
R59	680Ω	
R60	390K	
R61	1000Ω 1W	
R62	680Ω 1W	
R63	10K	
R64	33K	
R65	6800Ω	
R66	120K	
R67	3300Ω	
R68	1meg	
R69	1000Ω	
R70	1000Ω 1W	②
R71	1000Ω 1W	③
R72	33K	
R73		#63-4637
R74	100Ω	
R75	330Ω 1W	
R76	560Ω	
R77	560Ω	
R78	100K	
R79	330K	
R80	330K	
R81	1meg	
R82	120K	
R83	100K	
R84	100K	
R85	15meg	
R86	120K 2W	
R87	47K	
R88	22K	
R89	1meg	
R90	100Ω	
R91	100Ω	
R92	10K 3W	
R93	3900Ω 4W	
R94	3300Ω 1W	③
R95		#63-4648 ③
R96	2.2meg	
R97	9.1Ω	
R98	22K 1W	
R99	250K	
R100	1.5meg	
R101	2.7meg	

Zenith Part Number.
① 3300Ω TW is used with Tuner 175-163 (Part #63-4658).
② Some versions may use Component Combination for R46 & C32 (Part #87-5).
③ A single 330Ω 1W Resistor may be used in some versions for R70 & R71.
④ Part of T3.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1A	1st Video IF	8-48046 ①						
B	41.25MC Trap		*	*				
L2A	39.75MC Trap	8-41883						
B	37.25MC Trap							
L3A	2nd Video IF	8-41889						
B	47.25MC Trap							
L4	3rd Video IF	8-46741 ②	*	*				
L5	4th Video IF	8-47956						

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L6	Series Peaking Coil	8-41879	19-3093	19-3093	TV-181	6177	VP-3	90uh
L7	RF Choke	8-23888	19-1004	19-1004	BC-588	4810		8uh
L8	Shunt Peaking Coil	8-43819	19-3160	19-3160	TV-184	6180	VP-5	170uh
L8A	4.5MC Trap	8-43125 ②						
B	1st Sound IF							
L10	Shunt Peaking Coil	8-16011	19-3250	19-3250	TV-186	6181	VP-6	250uh
L11	Series Peaking Coil	8-43818	19-3180 *	19-3180 *	TV-184 *	6180	VP-5 *	170uh ④
L12	2nd Sound IF	8-43717 ①	17-1071 a	17-1071 a	TV-168 a			
L13	Quadrature Coil	8-47703	20-1005 †	20-1005 †	TV-121 †	1480 †		
L14	RF Choke	8-23777	19-1005	19-1005	BC-588	4812		10uh

① Alternate Part #8-48045.
② Alternate Part #8-48740.
③ Alternate Part #8-43126.
④ Wound on 5600Ω Resistor.
⑤ Alternate Part #8-41896.

* Parallel with 5600Ω Resistor.
a Enlarge mounting hole.
† Remove 30mmf Capacitor (C44).

TRANSFORMER (HORIZ. OSC.)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L15	23Ω			8-47150						Tap ⑤ 98Ω

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L16	Width Coil .39MH-2.1MH 4MH-22.7MH	8-49099								
L17	Linearity Coil 5.4MH-29MH	8-47660								WLC-3

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L18	.310A	43Ω	1.1 Hy.	96-1694						C-38X

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ② 2.2A	600VCT ③ 320A	5V ④ 6A	95-1693						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ⑤ 8.5A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Output	95-1696	26873	A-134X	V316 ①②		A-8148 ①	26873	A-118 ②
T3	Yoke Horiz. (25MH) (10^{10}) Vert. (40MH) Rear Cover and Centering Device	95-1696 ④							
T4	Horiz. Output	8-46554 8-47662							

① Drill new mounting hole.
② Includes R94, R95, and C72
③ Cut and tape blanking lead.
④ Use 8 to 1 turns ratio.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	10K	3-4Ω	95-1569	24S2	A-2932	AU-808	A-3879	TW8H	S-17X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: ZENITH PART No.	QUAM PART No.	NOTES
SP1	6" x 9"	PM	3-4Ω	49-951 ①	69A3	① Use used in Models E2747E, EU, M, MU, R, RU, W, WU.
SP2	4"	PM	14-16Ω	49-818 ②	4AU5Z4	Two used in Models E2756W, WU.
	6" x 9"	PM	6-8Ω	49-831 ③	69AUZ8.8	② Use used in Models E2747E, EU, M, MU, R, RU, W, WU, E2755E, EU, R, RU, W, WU, E2764W, WU, E3356E, R, R
				49-7528 ④		Two used in Models E3354E, R, W, E3360W.
						④ Use used in Models E3356E, H, R.

ZENITH CHASSIS 18D20, Q, U, 18E20, Q, U, S-48433, S-48434

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	ZENITH PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1		103-20 *	SD-91 ♦	K1615 *			* Dual Selenium Diode ♦ Silicon (2 required)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	N	7/10A 250V	136-38	62-21	333.750 (N 7/10A 250V)	346010	N 7/10	HN 1/2 to 3/4
M3	3AG	5A 125V S/B P/T	136-42		315005 (5A 125V S/B) (P/T)		MDV-5	
M4	1" length of #24 wire							

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ZENITH PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M5		103-23	1N60	1N60	1N64	Video Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M6	Tuner	175-144	VHF, STANDARD COIL Replacement Type #GG4220/A, Note 1
	Tuner	175-136	VHF, Note 2
	Tuner	175-143	VHF with UHF Provisions, "U" Versions of Models in Note 1
	Tuner	175-8	UHF, "U" Versions of Models in Note 1

Note 1. Used in Models E2747E, M, R, W, E2755E, R, W, E2764W.
Note 2. Used in Models E3354E, R, W, E3356E, H, R, E3360W.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	46-2341	Channel Selector, Note 1
Knob	S-47420	Channel Selector, Note 2
Knob	S-49420	Fine Tuning, Note 1
Knob	S-45733	UHF Dial, Used in "U" Models of Note 1
Knob	46-2035	Fine Tuning, Note 2
Knob	S-46726	Volume, All Models
Knob	S-48431	Contrast, All Models
Knob	46-1118	Horizontal Hold, All Models
Cabinet	14-3028	Model E2747E
Cabinet	14-3084	Model E2747M
Cabinet	14-3027	Model E2747R
Cabinet	14-3026	Model E2747W
Cabinet	14-3031	Model E2755E
Cabinet	14-3030	Model E2755R
Cabinet	14-3029	Model E2755W
Cabinet	14-3032	Model E2764W
Cabinet	14-3082	Model E3354E
Cabinet	14-3078	Model E3354R
Cabinet	14-3074	Model E3354W
Cabinet	14-3091	Model E3356E
Cabinet	14-3092	Model E3356H
Cabinet	14-3090	Model E3356R
Cabinet	14-3093	Model E3360W

Note 1. Models E2747E, M, R, W, E2755E, R, W, E2764W
Note 2. Models E3354E, R, W, E3356E, H, R, E3360W

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

TUNER PARTS LIST AND DESCRIPTIONS

175–136

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amplifier	6ER5/GG(6ES5) *	V202	Mixer - Osc.	6CG8

* Alternate

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120 N2200 10%	#22-3060				*		
C202	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C203	30 5%	#22-3111						
C204	28 10%		NPO-DI 25	TCZ-27	C10Q27C	CCD-270	GP429	10TS-Q27
C205	24		NPO-DI 25	DTZ-25	C10Q24C	CCD-250	GP425	10TS-Q25
C206	1000		EF-001	MFT-1000		CCF-102	CT280A	
C207	1-4.5	#22-3148		829-6				
C208	75	#22-3147						
C209	1-4.5	#22-3148		829-6				
C210	1-4.5	#22-3148		829-6				
C211	47 10%		NPO-DI 47	DTZ-47	C10Q47C	CCD-470	GP447	10TS-Q47
C212	40 10%	#22-3112						
C213	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C214	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C215	18 N220 10%	#22-3025						10TCR-Q18
C216	7.5 N150 10% †	#22-3026						10TCP-V82
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	
C219	1000		EF-001	MFT-1000		CCF-102	CT280A	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
# Zenith Part Number. † Alternate Value 6.8mmf ±.25mmf.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	120K	
R202	1000Ω	
R203	2700Ω	

ITEM No.	RATING	REMARKS
R204	220K	
R205	33K	
R206	15K 1W	

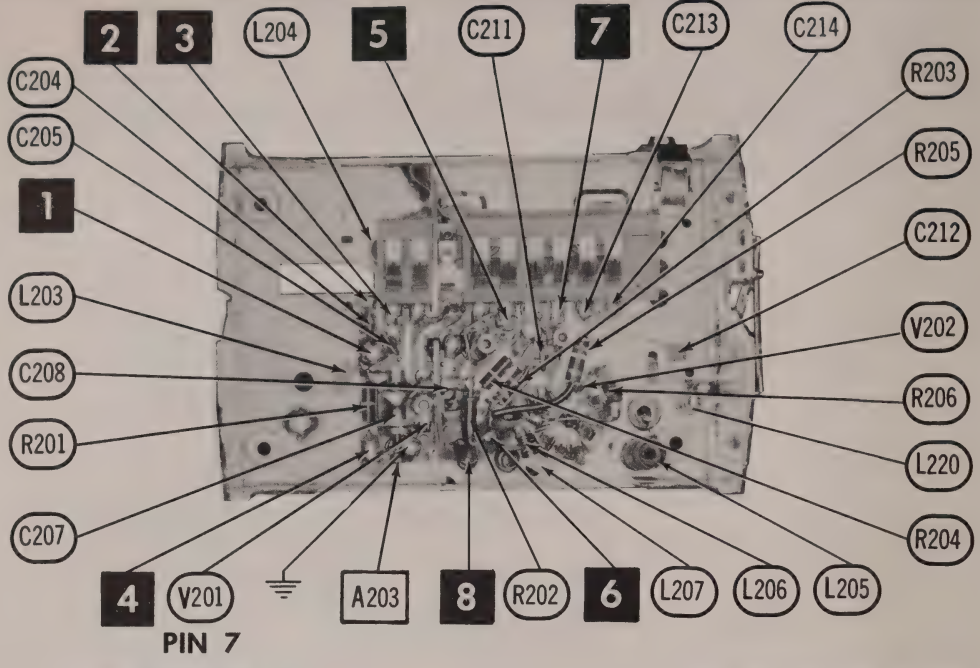
ITEM No.	RATING	REMARKS
R207	3900Ω	

COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L201	Ant. Trans. Assy.	S-41511	
L202	RF Choke	20-657 †	
L203	IF Trap Coil	S-40497	
L204	RF Choke	20-756	
L205	Ant., RF, Mixer Grid & Osc. Coils	174-2	Channel 2
L206	"	174-3	Channel 3
L207	"	174-4	Channel 4
L208	"	174-5	Channel 5
L209	"	174-6	Channel 6
L210	"	174-7	Channel 7

† Part of L201.

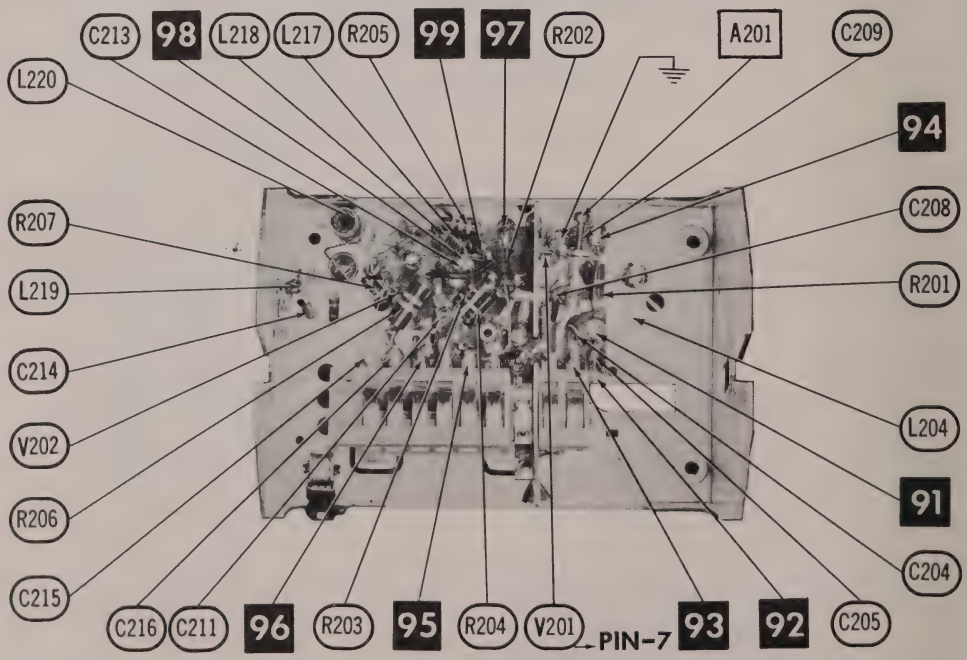
ITEM No.	USE	ZENITH PART No.	NOTES
L211	Ant., RF, Mixer Grid & Osc. Coils	174-8	Channel 8
L212	"	174-9	Channel 9
L213	"	174-10	Channel 10
L214	"	174-11	Channel 11
L215	"	174-12	Channel 12
L216	"	174-13	Channel 13
L217	Fil. Choke	20-734	
L218	RF Choke	20-721	
L219	Fine Tuning Coil	S-43559	Includes Assy.
L220	Mixer Plate Coil	S-45638	



A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

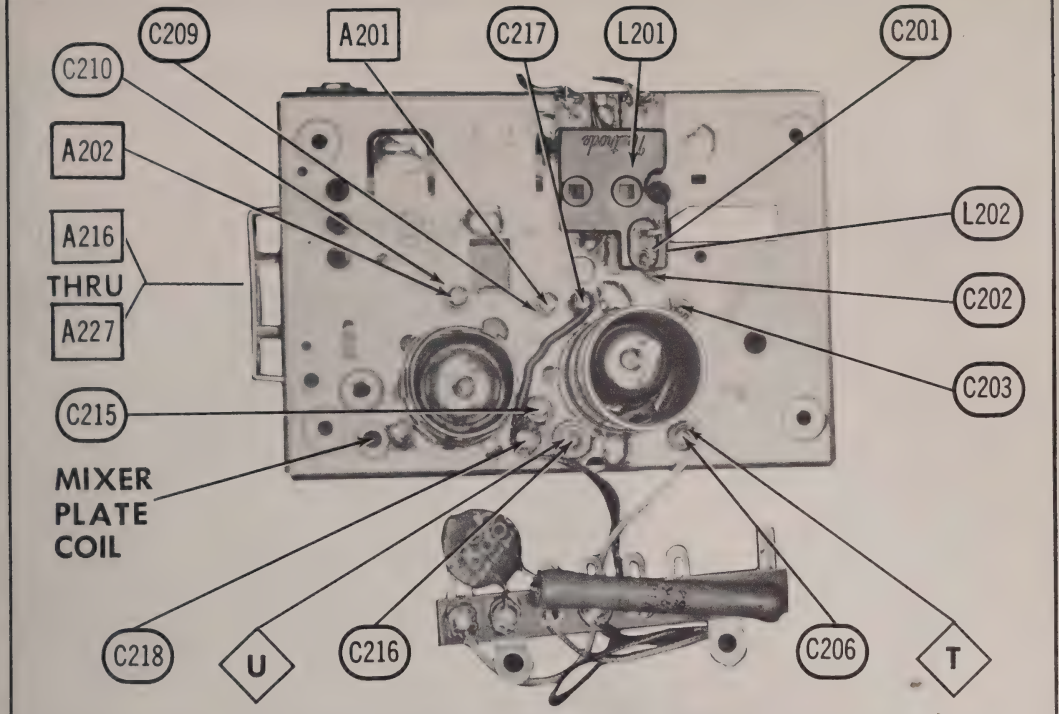
VHF TUNER 175-144 - BOTTOM VIEW



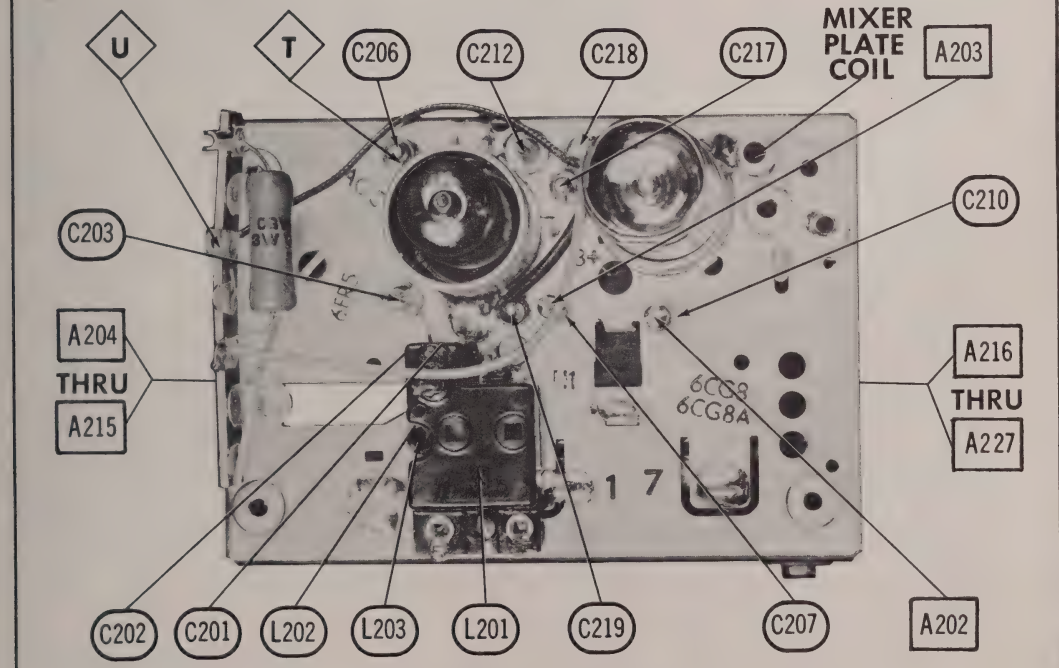
A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

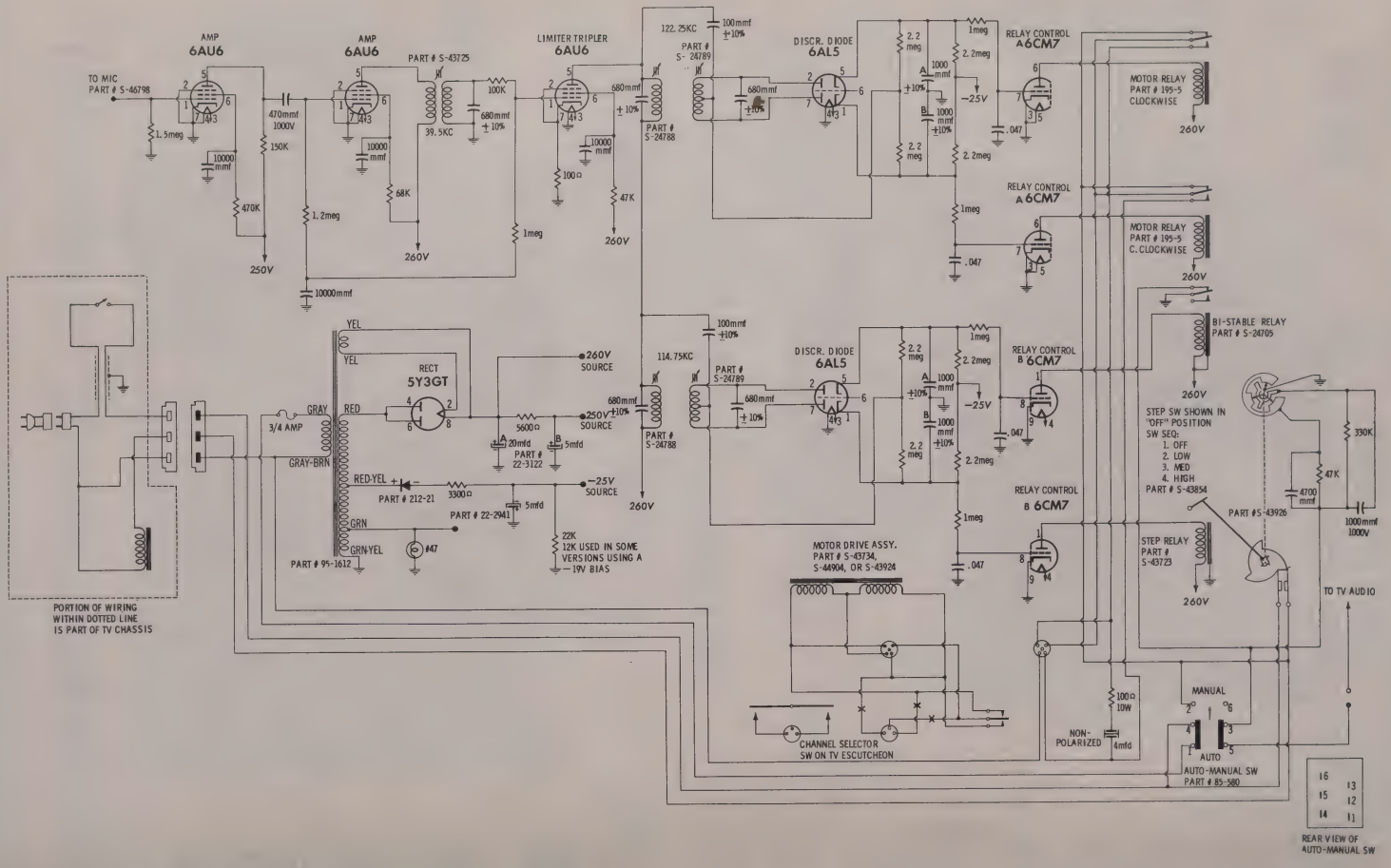
VHF TUNER 175-136 - BOTTOM VIEW



VHF TUNER 175-144 - TOP VIEW



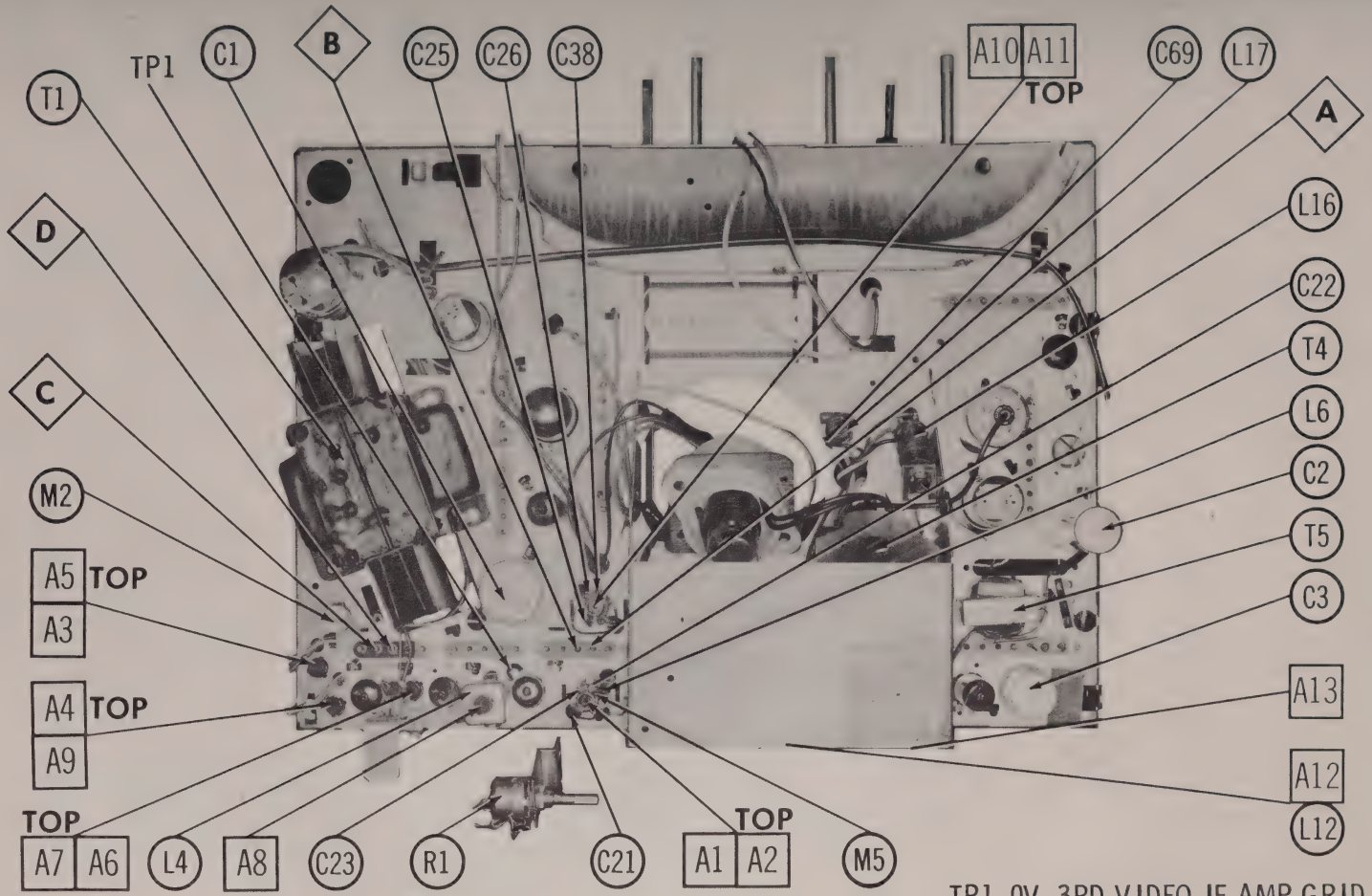
VHF TUNER 175-136 - TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1960

REMOTE CONTROL RECEIVER S-48434



CHASSIS - TOP VIEW

ZENITH CHASSIS 18D20, Q, U,
18E20, Q, U, S-48433, S-48434

FOLDER 2

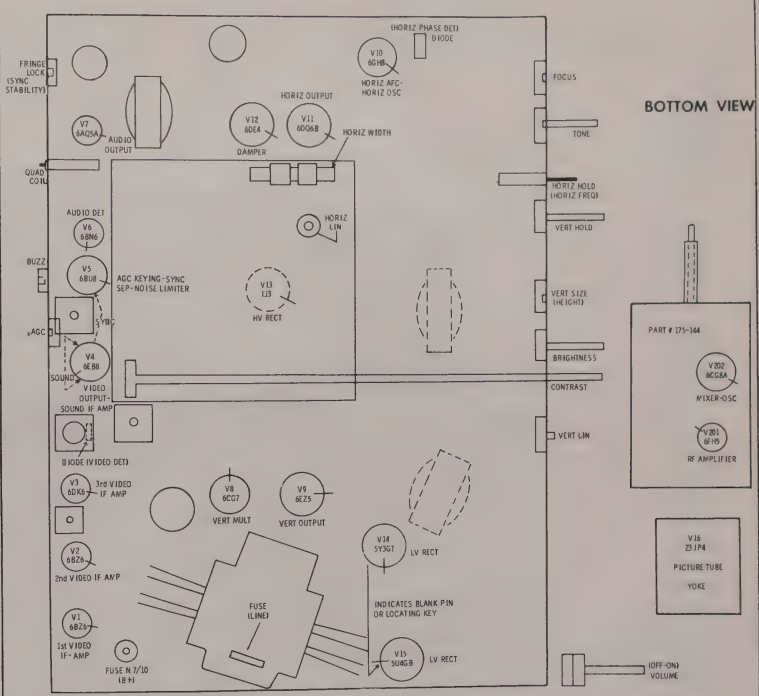
RESISTANCE MEASUREMENTS

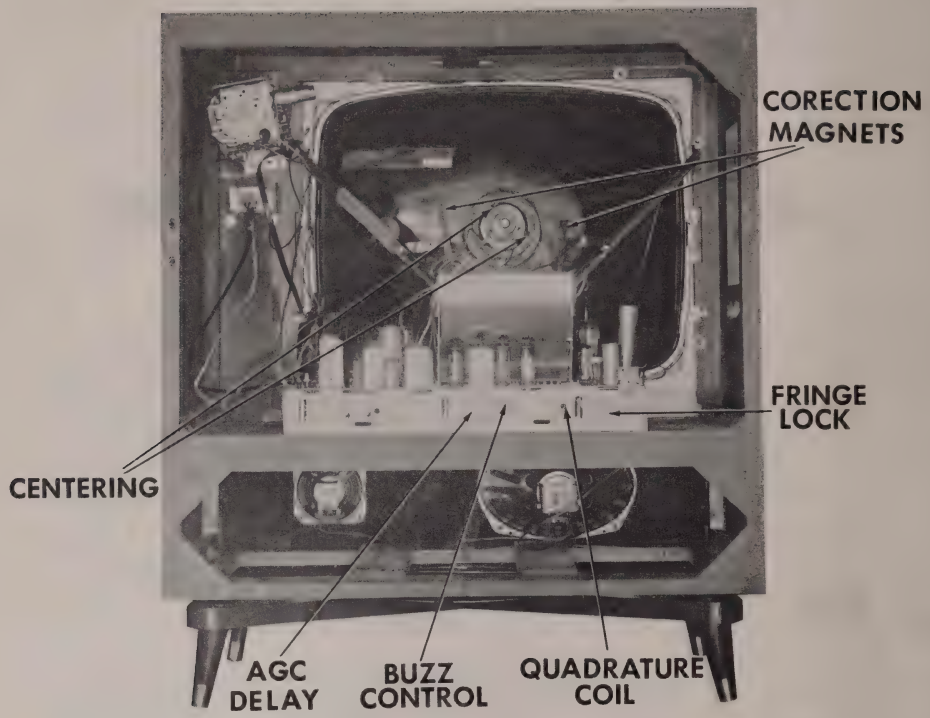
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1.5meg	1500Ω	.1Ω	0Ω	▲220Ω	▲220Ω	1500Ω		
V2	6BZ6	†56K	INF	.1Ω	0Ω	†1000Ω	†1000Ω	▲22Ω		
V3	6DK6	0Ω	120Ω	.1Ω	0Ω	†8200Ω	†8200Ω	0Ω		
V4	6EB8	0Ω	100K	†440K	.1Ω	0Ω	15Ω	2700Ω	† 27K	†7500Ω
V5	6BU8	● 5800Ω	†22K	800K	.1Ω	0Ω	115K	†800K	62k	†8.2meg
V6	6BN6	● 340Ω	.1Ω	.1Ω	0Ω	†27K	3.7Ω	†390K		
V7	6AQ5A	0Ω	680Ω	.1Ω	0Ω	†1790Ω	†1000Ω	0Ω		
V8	6CG7	†4.6meg	●2.1meg	0Ω	0Ω	.1Ω	†120K	6500Ω	3300Ω	NC
V9	6EZ5	TP	.1Ω	†765Ω	†430Ω	●1.2meg	NC	0Ω	●780Ω	
V10	6GH8	†100K	100K	†47K	0Ω	.1Ω	†120K	98Ω	0Ω	1.9meg
V11	6DQ6B	NC	.1Ω	TP	†10K	1meg	NC	0Ω	19Ω	TOP CAP †6Ω
V12	6DE4	TP	NC	¶2.8meg	NC	†43Ω	TP	0Ω	.1Ω	
V13	1J3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †180Ω
V14	5Y3GT	NC	¶	TP	25Ω	TP	27Ω	TP	¶	
V15	5U4GB	NC	¶	TP	25Ω	NC	27Ω	TP	¶	
V16	23JP4	NC	●115K	.1Ω	0Ω	0Ω	●1meg	200K	NC	
V201	6FH5	0Ω	3meg	0Ω	.1Ω	†6000Ω	0Ω	0Ω		
V202	6CG8A	3900Ω	†8800Ω	0Ω	0Ω	.1Ω	†5000Ω	†5000Ω	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 8 OF V15.
♯ MEASURED FROM PIN 3 OF V12.
▲ MEASURED FROM PIN 2 OF V2.

NC NO CONNECTION
TP TIE POINT

TUBE PLACEMENT CHART





CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

The Horizontal Hold is equipped with a stop which limits rotation to approximately 270° with the knob on the shaft. To adjust, remove the knob and adjust by turning the shaft until the picture is synchronized to the point where it is virtually impossible to disrupt horizontal synchronization when switching from channel to channel. Install the knob with its pointer centered between the stops.

Adjust Width Slug (B1) for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.

Adjust the Horizontal Linearity Slug (B2) for a picture that is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

TV CHASSIS REMOVAL MODEL E2755

1. Remove 3 push-on type knobs.
2. Remove 8 wood screws holding rear cover. Remove rear cover.
3. Remove 4 chassis bolts at bottom of cabinet.
4. Remove 6 screws holding mounting around picture tube (2 on each side and 2 at top).
5. Remove speaker leads.
6. Remove ground wire to tuner.
7. Remove 3 wires from tuner.
8. Remove 2 screws holding on-off switch bracket.
9. Pull chassis straight out.

PICTURE TUBE REMOVAL

1. It is necessary to remove chassis for picture tube removal. (See "TV Chassis Removal".)
2. Remove 6 screws in front of chassis holding picture tube mounting.
3. Remove 2 screws holding mounting on high voltage cage.
4. Remove picture tube.

PHOTOFACT® Folder

**AUTOMATIC
MODEL RT-7B**

TRADE NAME	Automatic Model RT-7B
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.
TYPE SET	Battery Operated 4 Tube, 1 Transistor Universal Type Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1.6 Amp @ 12.6 Volts DC
TUNING RANGE - BROADCAST	538-1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

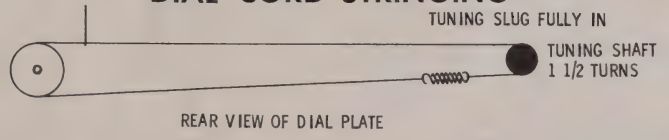
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4 — GENERAL CEMENT #5097, 8727; WALSCO #2515

A5, A6, A7 — GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089; WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ mod.)	High end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2	"	1610KC	"	"	A5	"
3	High side thru 68mmf to antenna receptacle. Low side to chassis.	"	"	"	A6, A7	"
4	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JD728

PHOTOFACT® Folder

AUTOMATIC
MODEL RT-7B

TRADE NAME	Automatic Model RT-7B
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.
TYPE SET	Battery Operated 4 Tube, 1 Transistor Universal Type Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1.6 Amp @ 12.6 Volts DC
TUNING RANGE-BROADCAST	538-1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

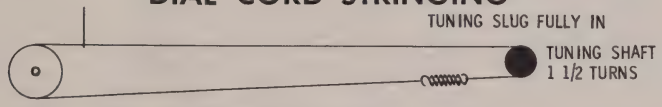
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4 — GENERAL CEMENT #5097, 8727; WALSCO #2515

A5, A6, A7 — GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089; WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400% mod.)	High end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2	"	1610KC	"	"	A5	"
3	High side thru 68mmf to antenna receptacle. Low side to chassis.	"	"	"	A6, A7	"
4	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

DIAL CORD STRINGING



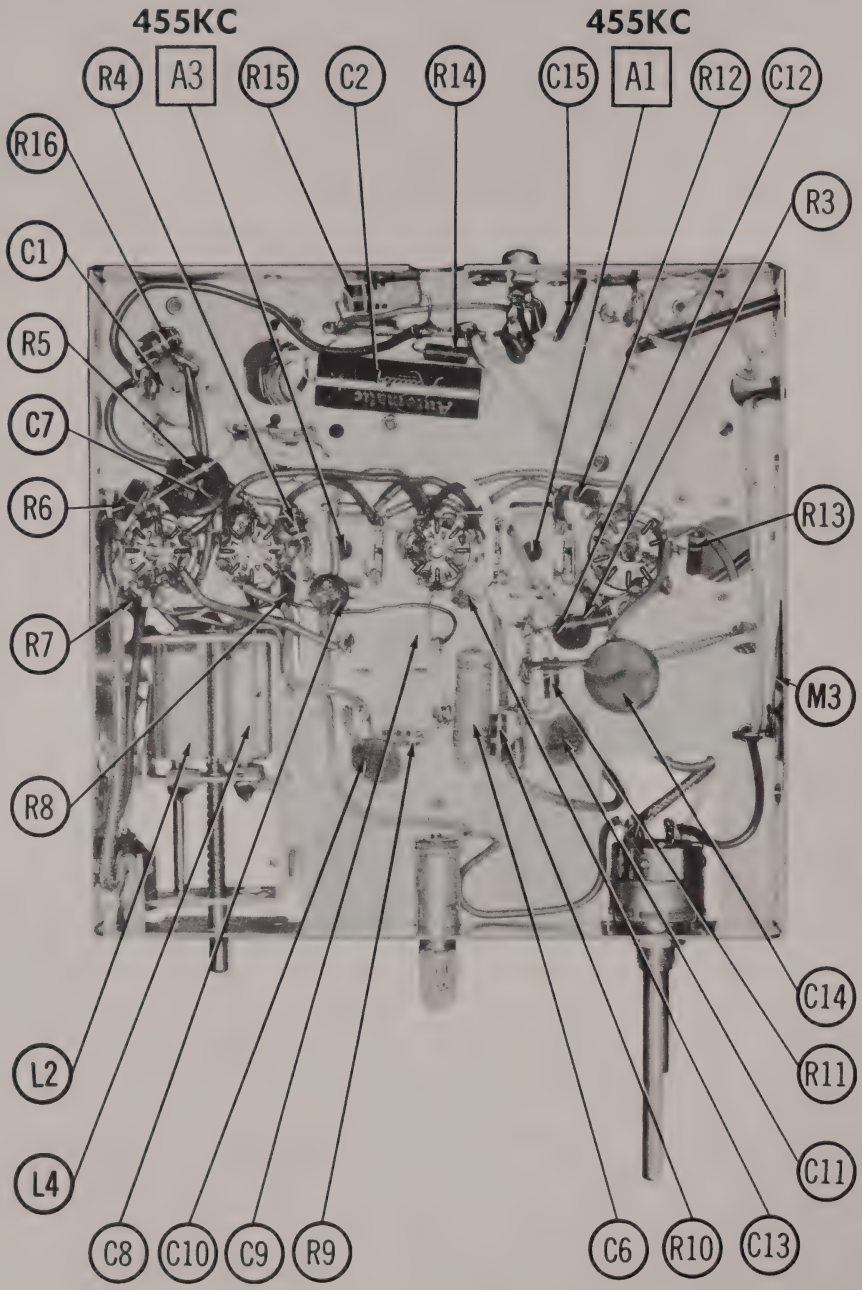
REAR VIEW OF DIAL PLATE

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

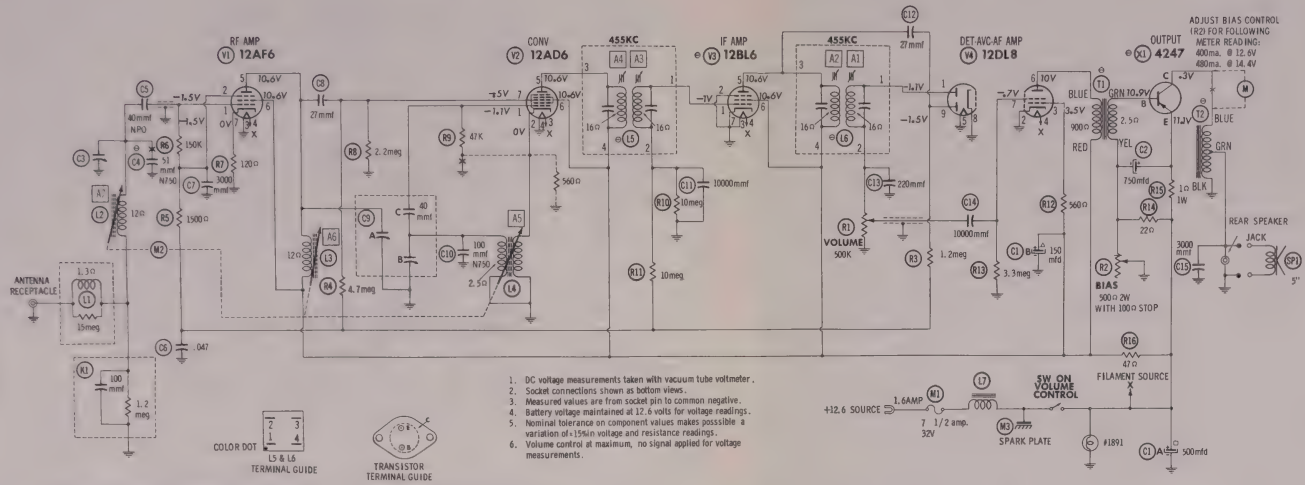
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JD728

AUTOMATIC
MODEL RT-7B
AUTOMATIC
MODEL RT-7B
SET491 FOLDER 3



CHASSIS BOTTOM VIEW



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

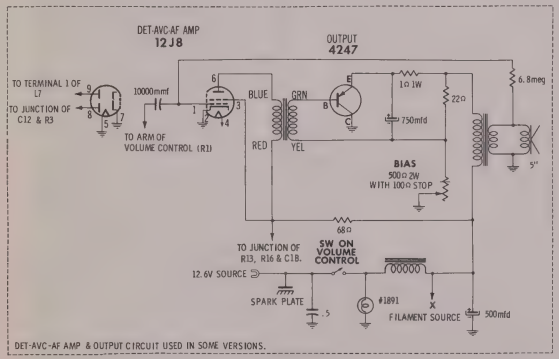
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AF6	6meg	5.8meg	0Ω	1.6Ω	59Ω	47Ω	120Ω		
V2	12AD6	47K	.7Ω	1.6Ω	0Ω	63Ω	47Ω	2.2meg		
V3	12BL6	8meg	0Ω	0Ω	1.6Ω	63Ω	47Ω	0Ω		
V4	12DL8	500K	0Ω	610Ω	1.6Ω	0Ω	950Ω	3.3meg	0Ω	7.5meg

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.



DET-AVC-AF AMP & OUTPUT CIRCUIT USED IN SOME VERSIONS.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1960

AUTOMATIC
MODEL RT-7B

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	RF Amplifier	12AF6
V2	Converter	12AD6
V3	IF Amplifier	12BL6 (12AF6) *
V4	DET - AVC - AF Amp	12DL8

* Alternate

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	4247 *	Output	2N257			2N257	PNP

*A 2N257 or equivalent may be used in some versions.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■500	15	20-315			WP200.7		TVLS-2155 *	
B	▲150	15							
C2	750	3	20-757	SRE3V500	BR1000-6	PETA190	TD-1000-6	TVAS-1097 *	

*Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3		#28-800		TCN-51	C10Q51U			
C4	51 N750	Note 1		TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C5	40 NPO		NPO-DI39	DD-503	CUB2547	4DP-3-473	GEM-4147	2TM-S47
C6	.047 200V		P288N-047	DD-302	BYA10D3	CCD-302	GP230	5HK-D30
C7	3000		DI-3000	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C8	27		NPO-DI27					
C9A		#28-4046						
B								
C	40		NPO-DI39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C10	100 N750		N750-DI100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C12	27		NPO-DI27	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C13	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C15	3000		DI-3000	DD-302	BYA10D3	CCD-302	GP230	5HK-D30

Note 1. Not Used In Some Versions
Automatic Part Number

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	80-57D	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-4	SWS-12	76-1	US-26	Power Off-On
R2	500Ω	2(ww)	62-501		39-500-100	112-500-100	FL-600S	Bias
	100Ω stop							

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	1.2meg	
R4	4.7meg	
R5	1500Ω	
R6	150K	
R7	120Ω	

ITEM No.	RATING	REMARKS
R8	2.2meg	
R9	47K	
R10	10meg	
R11	10meg	
R12	560Ω	

ITEM No.	RATING	REMARKS
R13	3.3meg	
R14	22Ω	
R15	1Ω 1W	#60-1
R16	47Ω	

#Automatic Part Number

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AUTOMATIC PART No.	REPLACEMENT DATA
K1	Antenna Filter	100mmf, 1.2 meg	89-4204	Sprague PRC-9

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		AUTOMATIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke		19-1011	19-1011		4626		24uh
L2	Ant Coil							
L3	RF Coil							
L4	Osc Coil							
L5	Input IF Trans	14-455①	16-6758	16-6758	BC-352	12-C1	RF-1	
L6	Output IF Trans	14-455①	16-6758	16-6758	BC-353	12-C2	RF-2	

① Alternate Part #14-1655-6

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~	AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L7	1.6A	.9Ω	.008Hy	75A601						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2	1	75A459A ①						

① Alternate Part #75A602A

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	12Ω	3-4Ω	75A-460 ①							

① Alternate Part #75A805

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	73-264B ①	5AlR	① Alternate Part #73-263

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AUTOMATIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½A 32V	108-100		307007.5 (SFE 7½P 32V)	155009	SFE 7½	HHH

MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M2	Tuner	78-417R	Manual
M3	Spark Plate	15-801FT	

CABINETS & CABINET PARTS

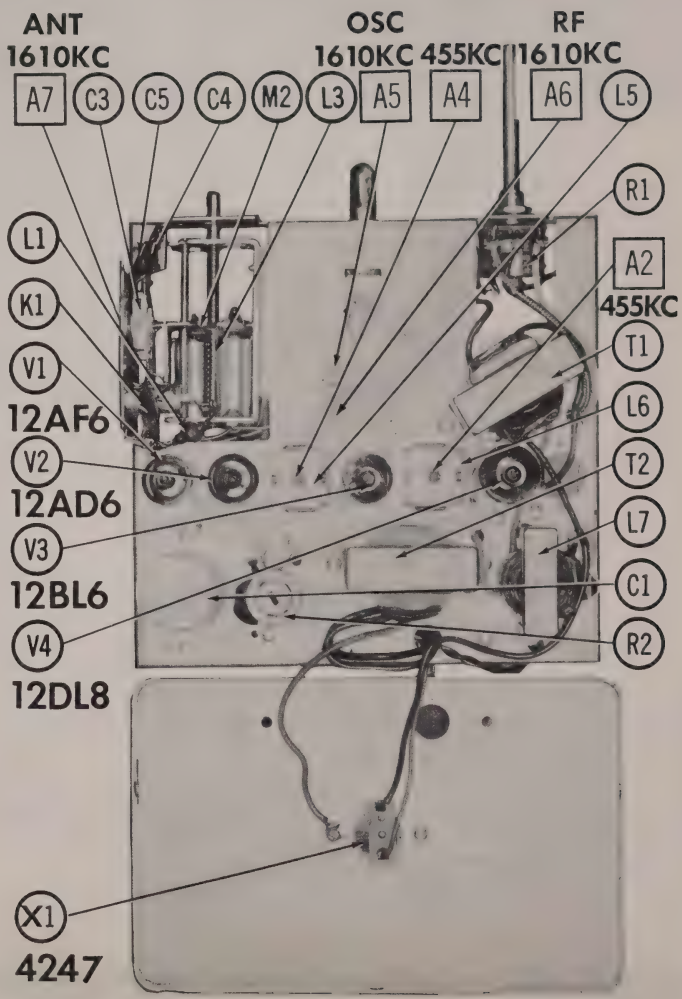
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	47B319-1	Tuning, Volume
Case	52C125X7	Complete with cover

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

AUTOMATIC MODEL TT528

AUTOMATIC MODEL TT528

AUTOMATIC MODEL TT528

TRADE NAME	Automatic Model TT528
MANUFACTURER	Automatic Radio Mfg. Co., Inc. 122 Brookline Ave. 15, Mass.
TYPE SET	Battery Operated 4 Tube Portable AM Receiver
POWER SUPPLY	1.5 Volts DC "A" Supply, 45 Volts DC "B" Supply
TUNING RANGE—BROADCAST	540 -1610KC RATING 150MA@1.5Volts DC, 3MA@45 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A5, A6...GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A7.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

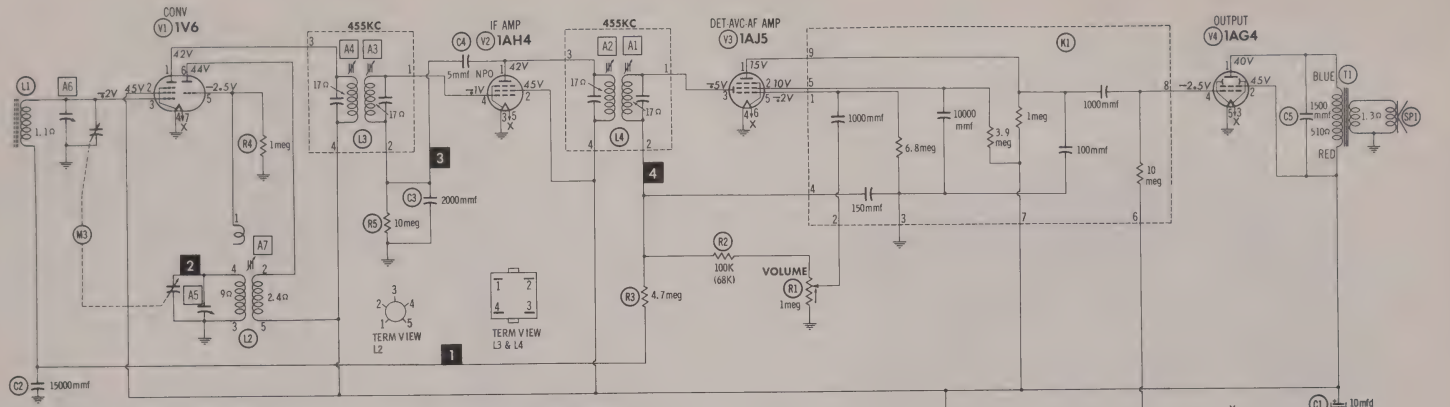
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1610KC	"	"	A5	"
3.	"	1400KC	Tune to 1400KC Signal.	"	A6	"
4.	"	600KC	Tune to 600KC Signal.	"	A7	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JF744

SET491 FOLDER 4



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1V6	†17Ω	†0Ω	5.7meg	0Ω	1meg	†2.4Ω	2.3Ω
V2	1AH4	†17Ω	†0Ω	0Ω	10meg	2.3Ω		
V3	1AJ5	†1meg	†3.9meg	1.1meg	0Ω	6.8meg	2.3Ω	
V4	1AG4	†510Ω	†0Ω	2.3Ω	10meg	0Ω		

† MEASURED FROM JUNCTION OF RED LEAD OF T1 AND C1.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

©Howard W. Sams & Co., Inc. 1960

AUTOMATIC
MODEL TT528

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Converter	1V6
V2	IF Amplifier	1AH4
V3	Det. -AVC-AF Amp.	1AJ5
V4	Output	1AG4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	50	CE-528	PWE50010	EC10-50	TT50X10	ML10-50	TE-1304	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	15000		BPD-015	DD-153	BYA10S15	CCD-153	GP115	5HK-S15
C3	2000		BPD-002	DD-102	BYA10D2	CCD-102	GP220	5HK-D20
C4	5 NPO		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C5	1500		BPD-0015	DD-152	BYA10D15	CCD-152	GP215	5HK-D15

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	1meg	½	RV-528					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	100K	(68K) *
R3	4.7meg	

ITEM No.	RATING	REMARKS
R4	1meg	
R5	10meg	

ITEM No.	RATING	REMARKS
R6	1500Ω	

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AUTOMATIC PART No.	REPLACEMENT DATA
K1	Audio Coupling	100mmf, 150mmf, 1000mmf, 1000mmf, 10000mmf, 1meg, 3.9meg, 6.8meg, 10meg	PC-528	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		AUTOMATIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	2A-528						
L2	Osc. Coil	L-528						
L3	Input IF Trans.	385PC	16-6800	16-6800	BC-348	10-C1		
L4	Output IF Trans.	385PC	16-6801	16-6801	BC-349	10-C2		

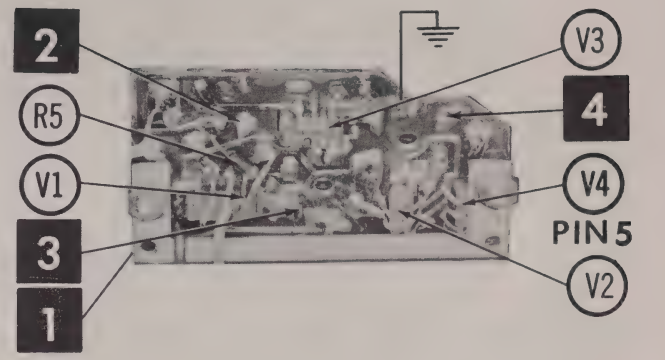
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1800Ω	10-12Ω	TO-2123							

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	QUAM PART No.	
SP1	2 3/4"	PM	10-12Ω	PM528	27A06Z12	

BATTERIES

ITEM No.	VOLTAGE	AUTOMATIC PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	45V								
M2	1.5V		1	U30	935	415	M-14R	M-213	

MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M3	Tuning Cap.	CV-528	2 Gang

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

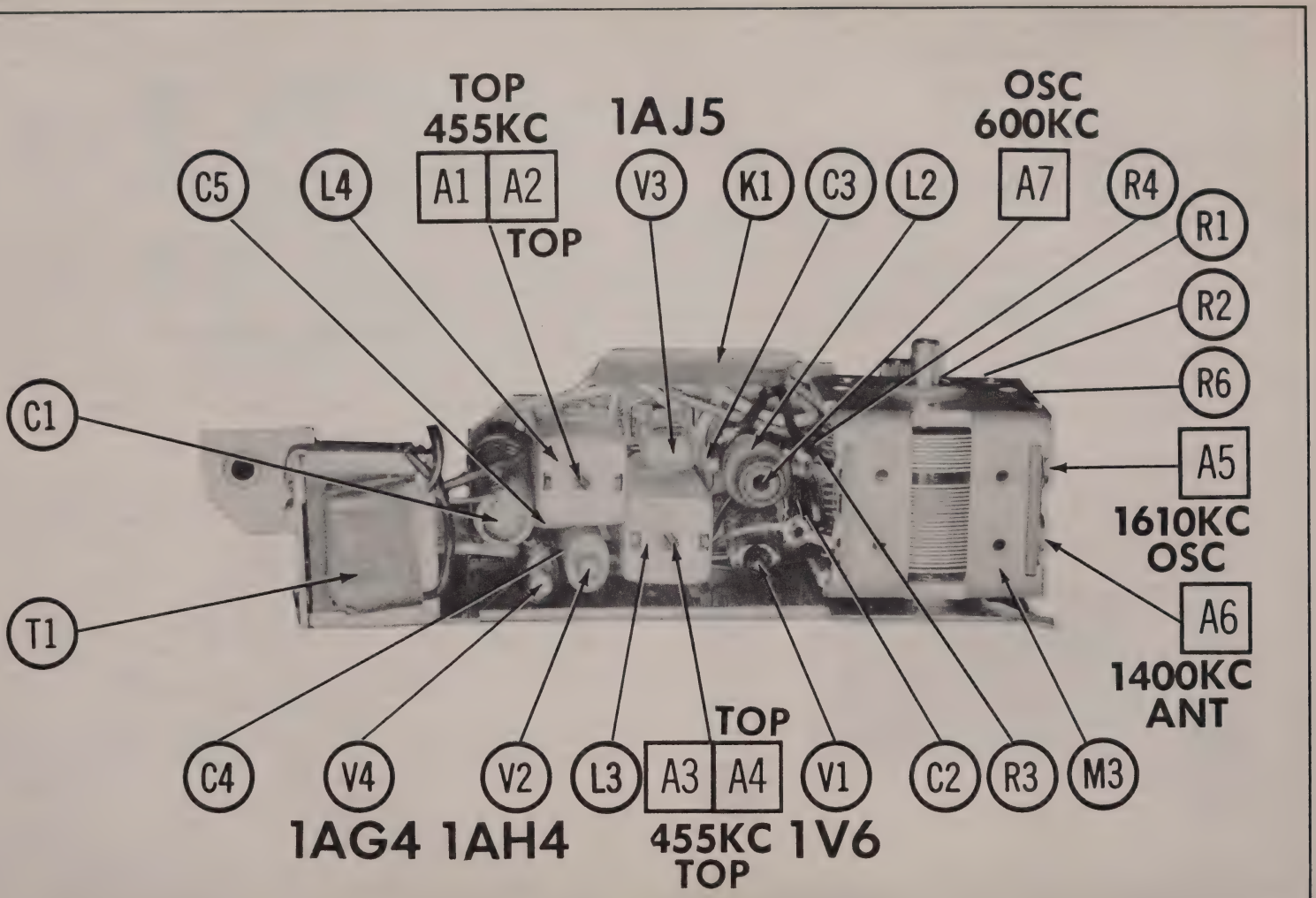
NAME	PART NO.	DESCRIPTION
Knob	H529	Tuning (Specify Color)
Knob	H530	Volume (Specify Color)
Cabinet	H528	Complete (Specify Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

FOLDER 4

AUTOMATIC
MODEL TT528



CHASSIS TOP VIEW

PHOTOFACT® Folder

BOGEN MODEL MX30

BOGEN MODEL MX30

BOGEN MODEL MX30

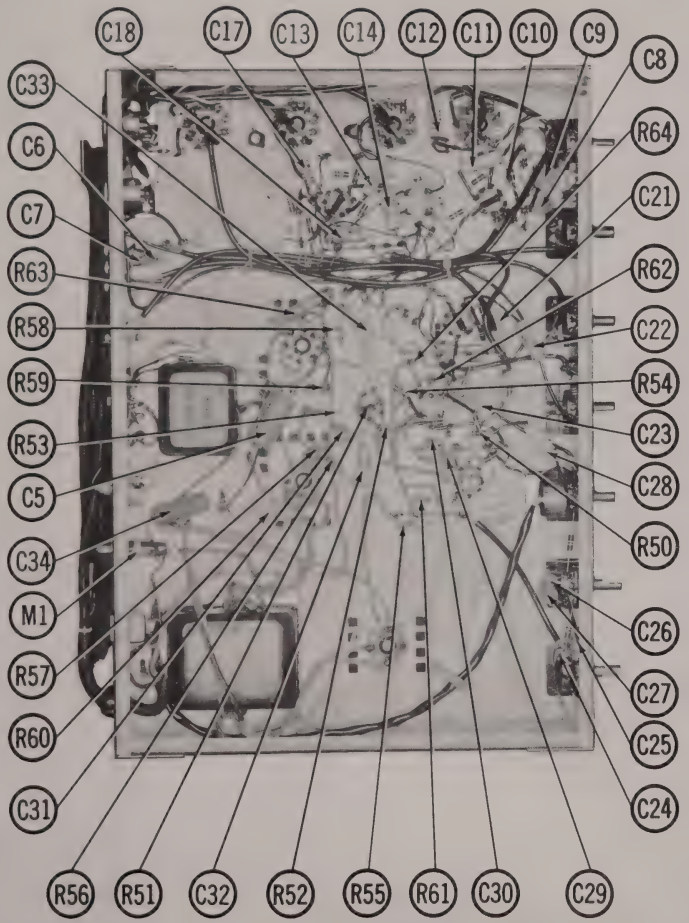
TRADE NAME	Bogen Model MX30
MANUFACTURER	Bogen-Presto Co., A Div. of the Siegler Corp., P.O. Box 500, Paramus, N. J.
TYPE SET	AC Operated 8 Tube, 7 Input Audio Amplifier
POWER SUPPLY	110 - 120 (or) 125 Volts AC, 60 Cycles RATING 125 Watts, 1.2 Amp. @ 117 Volts AC

SET 491 FOLDER 5

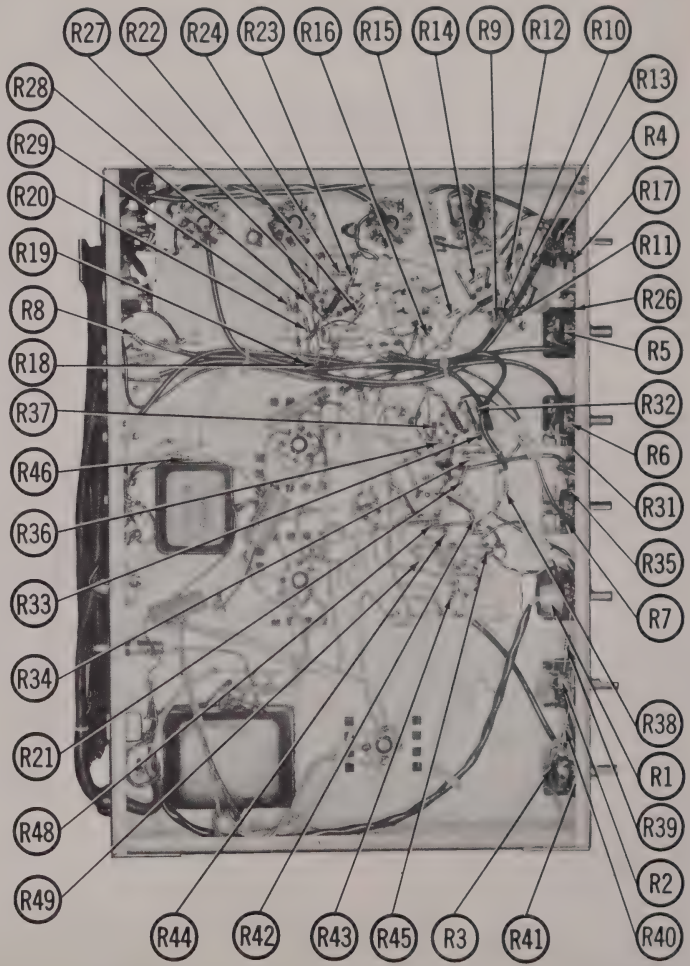
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

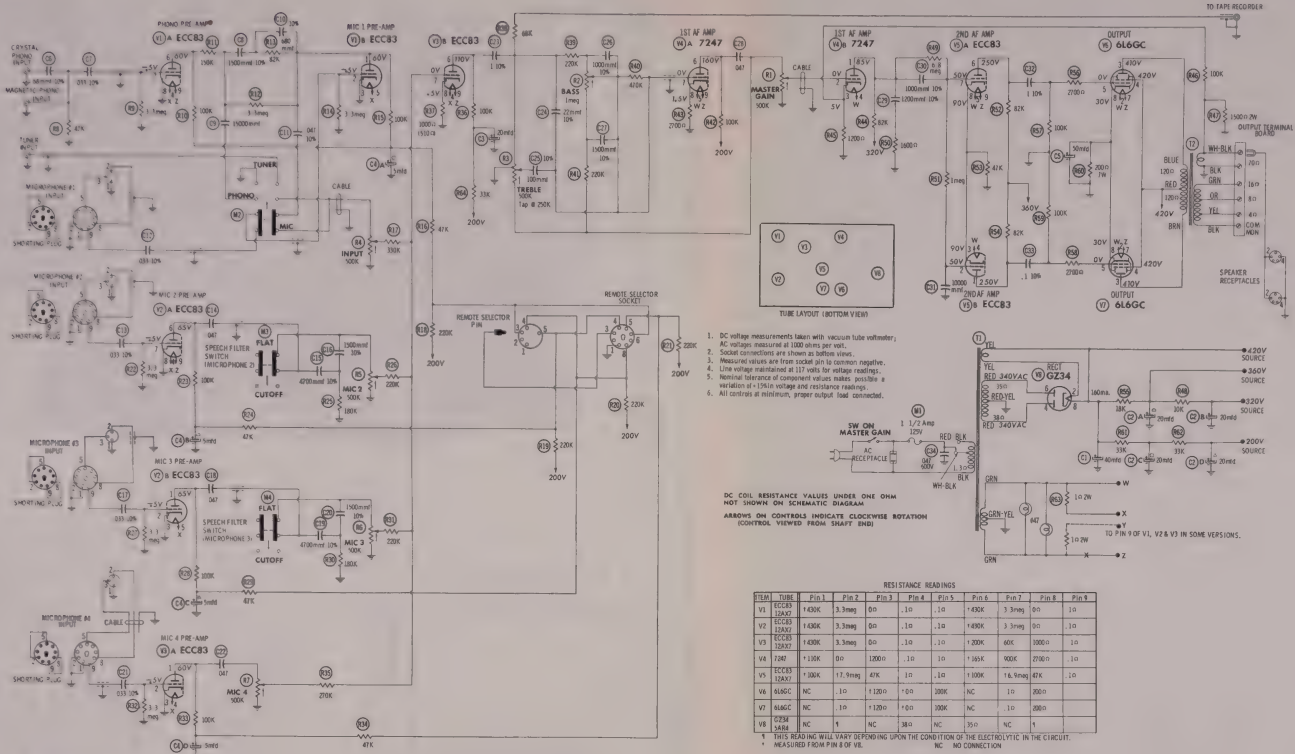
JX779



CHASSIS BOTTOM VIEW -
CAP., MISC. & RESISTOR IDENT. (R50-R64)



CHASSIS BOTTOM VIEW - RESISTOR IDENT.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	1430K	3.3meg	0Ω	.1Ω	.1Ω	1430K	3.3meg	0Ω	.1Ω
V2	ECC83 12AX7	1430K	3.3meg	0Ω	.1Ω	.1Ω	1430K	3.3meg	0Ω	.1Ω
V3	ECC83 12AX7	1430K	3.3meg	0Ω	.1Ω	.1Ω	1200K	60K	1000Ω	.1Ω
V4	7247	1110K	0Ω	1200Ω	.1Ω	.1Ω	1165K	900K	2700Ω	.1Ω
V5	ECC83 12AX7	1100K	17.9meg	47K	.1Ω	.1Ω	1100K	16.9meg	47K	.1Ω
V6	6L6GC	NC	.1Ω	1120Ω	0Ω	200K	NC	.1Ω	200Ω	
V7	6L6GC	NC	.1Ω	1120Ω	0Ω	200K	NC	.1Ω	200Ω	
V8	GZ34 5AR4	NC	1	NC	38Ω	NC	35Ω	NC	1	

1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
* MEASURED FROM PIN 8 OF V8. NC NO CONNECTION

NOTE: FOR HIGH-IMPEDANCE MICROPHONES, INSERT 9 PIN SHORTING PLUG IN IT'S RECEPTACLE AND CONNECT MICROPHONE TO 3 PIN RECEPTACLE. FOR LOW IMPEDANCE MICROPHONES, REMOVE SHORTING PLUG & USE AN IMPEDANCE MATCHING TRANSFORMER BETWEEN MICROPHONE & 9 PIN RECEPTACLE.

©Howard W. Sams & Co., Inc. 1960

BOGEN MODEL MX30

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Phono Preamp. - Mic 1 Preamp.	ECC83/12AX7
V2	Mic 2 Preamp. - Mic 3 Preamp.	ECC83/12AX7
V3	Mic 4 Preamp. - AF Mixer	ECC83/12AX7
V4	1st AF Amplifier	7247
V5	2nd AF Amplifier	ECC83/12AX7
V6	Output	6L6GC
V7	Output	6L6GC
V8	Rectifier	GZ34/5AR4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BOGEN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	40	500		AFH1-61	A0550	FP177	TMS-69	TVL-1950	
C2A	▲20	500			D0179.5	FP475	TMT-46	TVL-3956	
B	20	300					TD-20-350	TVA-1608	
C	■20	400							
D	▲20	350							
C3	20	250		AFH1-27	A0270	FP125		TVLS-1509.1*	
C4A	■5	200		AFH4-09	D0080	WP433.6	TMQ-9	TVL-4759.7	
B	▲5	200							
C	▲5	200							
D	5	200							
C5	50	50		PRS1350	BR505	TC39	TD-50-50	TVA-1308	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	68 10%		DI-68	DD-680	L10Q68	CCD-680	GP468	10TS-Q68
C7	.033 200V 10%		V84C2S33-10%		PM6S33	4DP-2-333		6TM-S33
C8	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C9	15000		BPD-015	DD-153	BYA10S15	CCD-153	B-115	5HK-S15
C10	680 10%		DI-680	DD-681	1R5T68	CCD-681	GP368	10TS-T68

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C11	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C12	.033 200V 10%		V84C2S33-10%		PM6S33	4DP-2-333		6TM-S33
C13	.033 200V 10%		V84C2S33-10%		PM6S33	4DP-2-333		6TM-S33
C14	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C15	4700 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C16	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C17	.033 200V 10%		V84C2S33-10%		PM6S33	4DP-2-333		6TM-S33
C18	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C19	4700 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C20	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C21	.033 200V 10%		V84C2S33-10%		PM6S33	4DP-2-333		6TM-S33
C22	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C23	.1 400V 10%		V84C4P1-10%		PM6P1	4DP-3-104		4TM-P1
C24	22 10%		DI-22	DD-220	L10Q22	CCD-220	GP422	10TS-Q22
C25	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T1
C26	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D1
C27	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C28	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C29	1200 10%		DI-1200	DD-122	1R5D12	CCD-122	GP212	10TS-D12
C30	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P1
C33	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P1
C34	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BOGEN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	77-001-377	B-60-S	A47-500K-Z	Q13-133	U48	Master Gain
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R2A	1meg	½	77-001-441	B-69	A47-1meg-S	Q11-137	U54	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	500K 250K Tap	½	77-001-442	BT-65	A47F5-500K	Q19-133X	UT-431	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	500K	½	77-001-367	B-60	A47-500K-Z	Q13-133	U48	Input
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	500K	½	77-001-367	B-60	A47-500K-Z	Q13-133	U48	Mic 2
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R6A	500K	½	77-001-367	B-60	A47-500K-Z	Q13-133	U48	Mic 3
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R7A	500K	½	77-001-367	B-60	A47-500K-Z	Q13-133	U48	Mic 4
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R8	47K	
R9	3.3meg	
R10	100K	
R11	150K	
R12	3.3meg	
R13	82K	
R14	3.3meg	
R15	100K	
R16	47K	
R17	330K	
R18	220K	
R19	220K	
R20	220K	
R21	220K	
R22	3.3meg	
R23	100K	
R24	47K	
R25	180K	
R26	220K	

ITEM No.	RATING	REMARKS
R27	3.3meg	
R28	100K	
R29	47K	
R30	180K	
R31	220K	
R32	3.3meg	
R33	100K	
R34	47K	
R35	270K	
R36	100K	
R37	1000Ω	(510Ω) *
R38	68K	
R39	220K	
R40	470K	
R41	220K	
R42	100K	
R43	2700Ω	
R44	82K	
R45	1200Ω	

ITEM No.	RATING	REMARKS
R46	100K	
R47	1500Ω 2W	
R48	10K	
R49	6.8meg	
R50	1600Ω	
R51	1meg	
R52	82K	
R53	47K	
R54	82K	
R55	18K	
R56	2700Ω	
R57	100K	
R58	2700Ω	
R59	100K	
R60	200Ω 7W	
R61	33K	
R62	33K	
R63	1Ω 2W	
R64	33K	

* Alternate Value.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	BOGEN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	125V ⓐ 1A Tap ⓐ 117V ⓐ 1.2A	680 VCT ⓐ .160A	5V ⓐ 1.9A	83-610-100				PM-8411		R-16B①
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ⓐ 3.6A									

① Drill New Mounting Holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	BOGEN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	8200Ω CT	16Ω Tap ⓐ 8Ω, 4Ω	83-299-100							
		SEC. 2								
		230Ω								

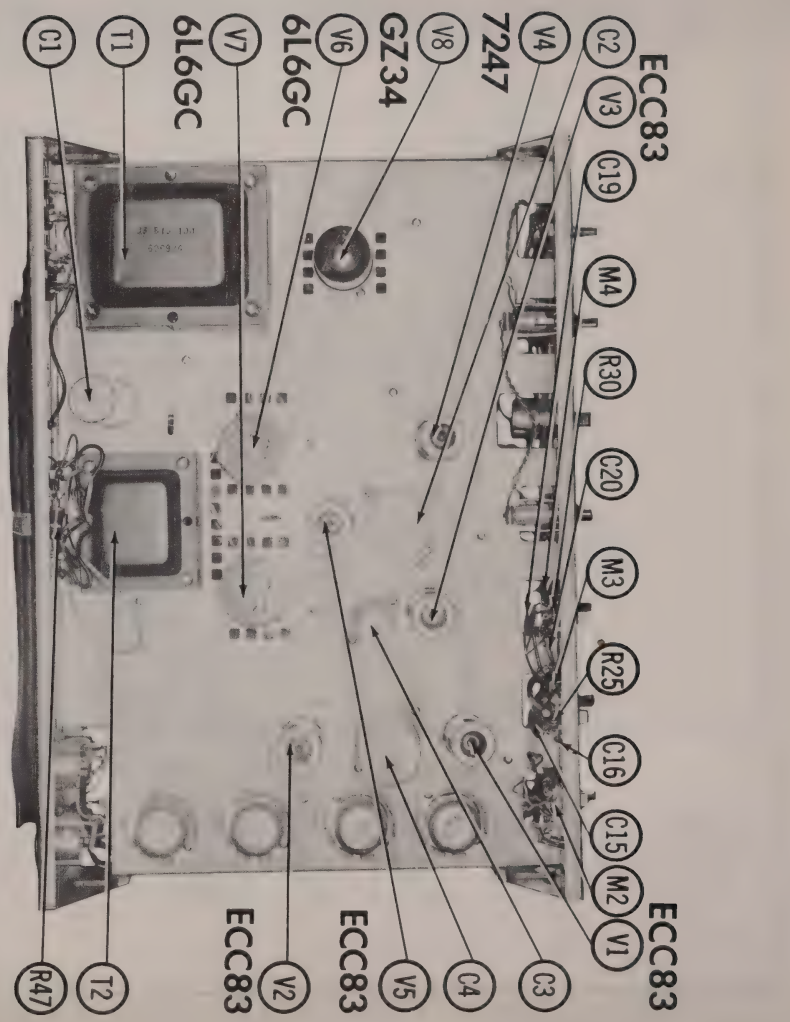
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BOGEN PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1¼A 125V			31301.5 (3AG 1¼A 125V)	342001	MDL 1¼	HKP

MISCELLANEOUS

ITEM No.	PART NAME	BOGEN PART No.	NOTES
M2	Switch		Selector (DP 3 Position Slide Type)
M3	Switch		Speech Filter Mic 2 (DPDT Slide Type)
M4	Switch		Speech Filter Mic 3 (DPDT Slide Type)

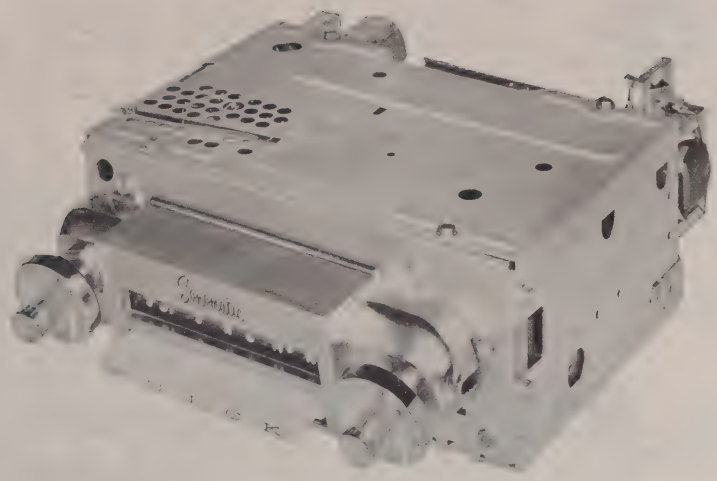
CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

BUICK MODEL 980051

BUICK MODEL 980051



TRADE NAME	Buick Model 980051 (For 1960 Buick Automobiles)
MANUFACTURER	Delco Radio Div., General Motors Corp., Kokomo, Indiana
TYPE SET	Battery Operated 4 Tube, 1 Transistor Custom Built AM Automobile Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 2.1 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	540 — 1615KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1 thru A4..... GENERAL CEMENT #9440
A5, A9, A10... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A6, A7, A8.... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262 KC (400∿ Mod.)	High freq. end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
	Check Setting of Oscillator core (A5). Rear of slug should be 1 5/ 8" from mounting end of coil form.					
2.	High side thru 82mmf to antenna receptacle. Low side to chassis.	1615KC	High freq. end stop.	Across voice coil.	A6, A7, A8	Adjust for maximum output.
3.	"	600KC	600KC Signal	"	A9, A10	"
4.	"	1615KC	1615KC Signal	"	A7, A8	"
5.	"	900KC	900KC Signal	"		Adjust pointer adjustment until pointer coincides with 900 on the dial.
6.	With radio installed in car and antenna fully extended, tune in a weak station near 900KC and adjust A8 for maximum output.					

PUSHBUTTON ADJUSTMENT

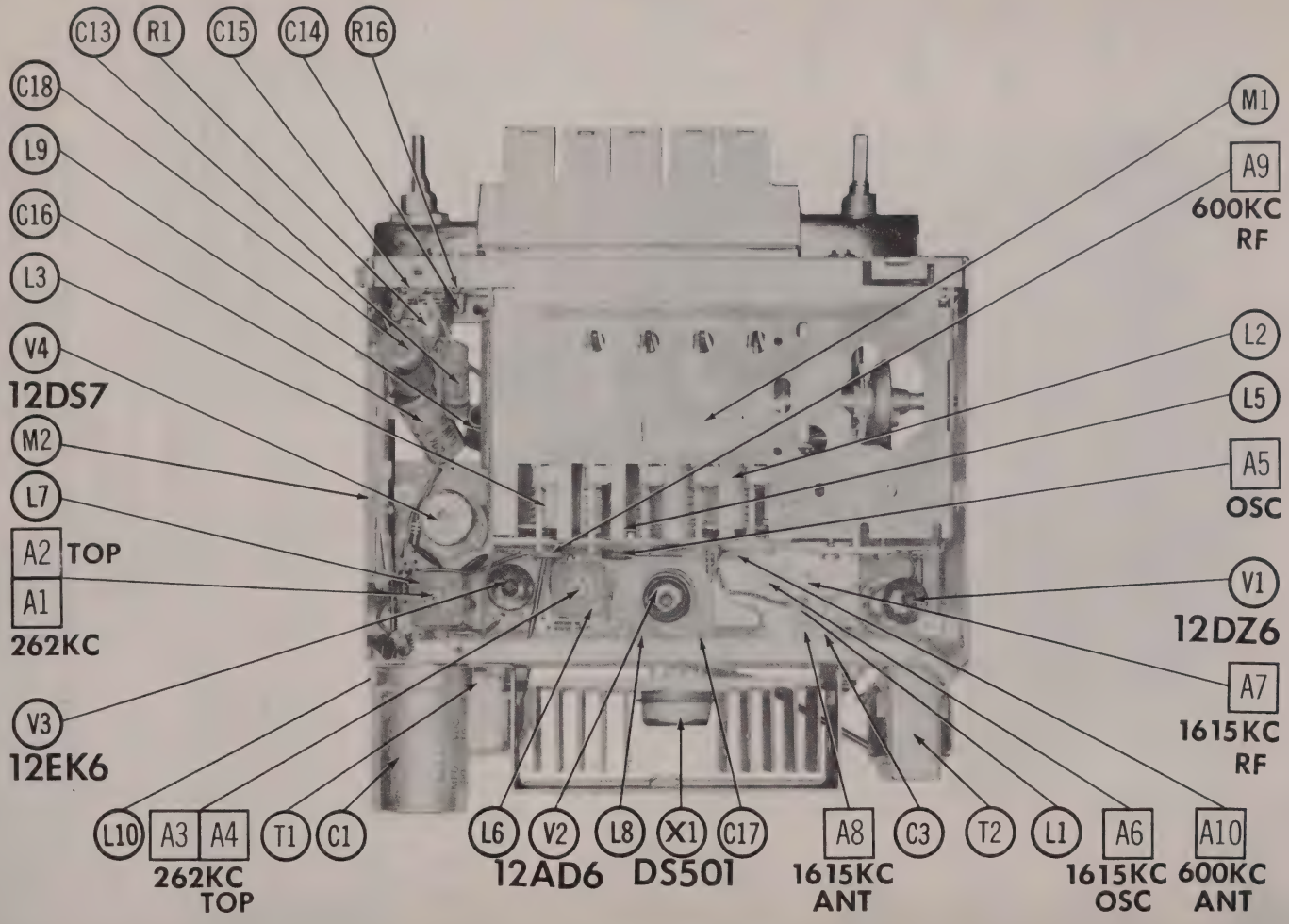
1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KD072

SET491 FOLDER 6



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12DZ6	V3	IF Amplifier	12EK6
V2	Converter	12AD6	V4	Det.-AVC-AF Amp.	12DS7

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	DS-501	Output	2N235A			2N677	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲750	16	7273728	AFH4-20-75		WP401.5		TVLS-4204 *	①
B	■600	16							
C	▲350	16							
D	4	11.5							
C2	1000	1	7271557	PRS6V1000	BR1000-6	TC110	TD-1000-6	TVA-1104	②

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① In some versions C1D may be 16V (C1 Part #7273847).
② Not used in some versions.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3		#7276220						
C4	.033 75V		P288N-033	DD-303	CUB6S33	1DP-2-333	GEM-4133	6TM-S33
C5A	68 N750 10%		N750-D1 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
B	39 N750 10%			TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39
C6A		#7273693						
B								
C7	220 5%		1469-00022	TCZ-220	22R5T22	CM-19B-22lJ	CNO-322	MS-322
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	.1 75V		P288N-1	DF-104	CUB2P1	1DP-3-104	GEM-201	2TM-P1
C10	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C11	47		BPD-000047	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C12	47		BPD-000047	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C13	.01 400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C14	22		1468-000022	TCZ-22	5W5Q22	CM-19B-220M	GP422	1FM-422
C15	560		DI-560	DD-561	L10T56	CCD-561	GP356	10TS-T56
C16	.47 100V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C17A	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
B	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C18	.47 100V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47

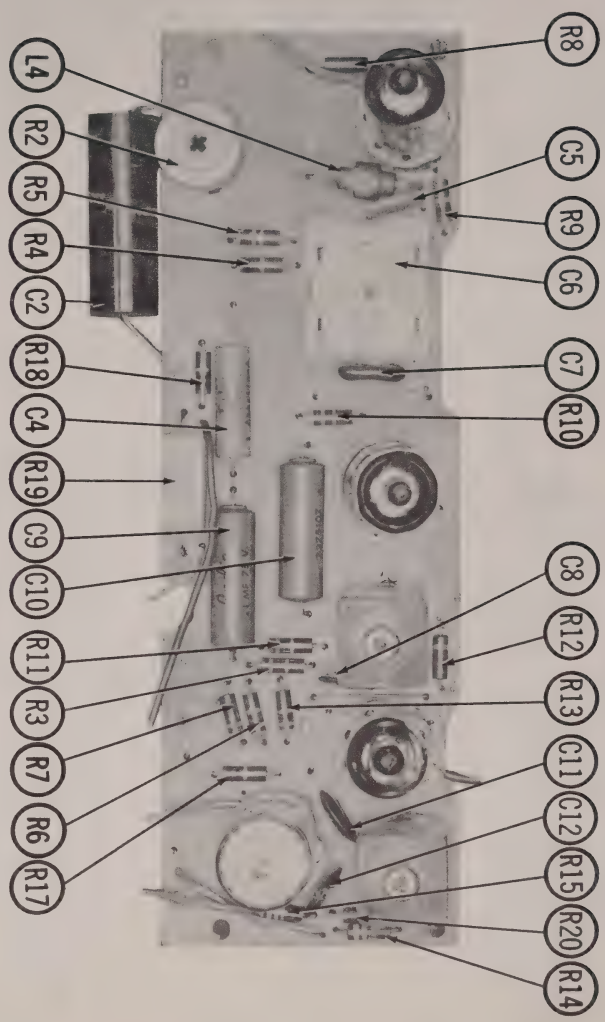
Delco Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5meg	½	7275219					Tone
B	5meg	½				† QJ-1347A		Volume
	2meg Tap							
C	Switch							Power Off-On
R2	175Ω	2(WW)	1221422					Bias
	56Ω Stop							

† "Concentrikit" equivalent: K-8 Kit with base elements & shafts: B12-240, P14-019 (Panel)
B18-141X, R1-105 (Rear)
76-1 (Switch)
S37 (Bushing)

PRINTED BOARD



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	1.8meg	
R4	1meg	
R5	820K	
R6	3.9meg	
R7	3.3meg	
R8	2.2meg	

ITEM No.	RATING	REMARKS
R9	10K	
R10	47K	
R11	1.8meg	
R12	220Ω	
R13	68Ω	
R14	47K	

ITEM No.	RATING	REMARKS
R15	390K	
R16	820K	
R17	15Ω	
R18	10Ω	
R19	.47Ω	#7271375
R20	15Ω	

Delco Part Number. Temperature Compensating, fuse type. Alternate Value .33Ω.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		DELCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke	7255738	19-1004	19-1004	BC-565	4610		6.5uh
L2	Ant. Coil	1221138						
L3	RF Coil	1221138						
L4	RF Choke	7269684	19-1041	19-1041	BC-514	4664		1.8MH
L5	Osc. Coil	1221151						
L6	Input IF Trans.	1221257	16-6756	16-6756	BC-344	13-PH1		
L7	Output IF Trans.	1221253						
L8	RF Choke	1217846						1.4uh
L9	"A" Lead Choke	1217846						1.4uh

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L10	.7A	.7Ω	.011 HY	7274342				TC-2		

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	13	1	7272822			TA-51			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10Ω Tap ⓐ 3-4Ω	1221428				TA-50			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	1194080	8A31Z4	

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner	Series P2	Complete
M2	Spark Plate	7275182	

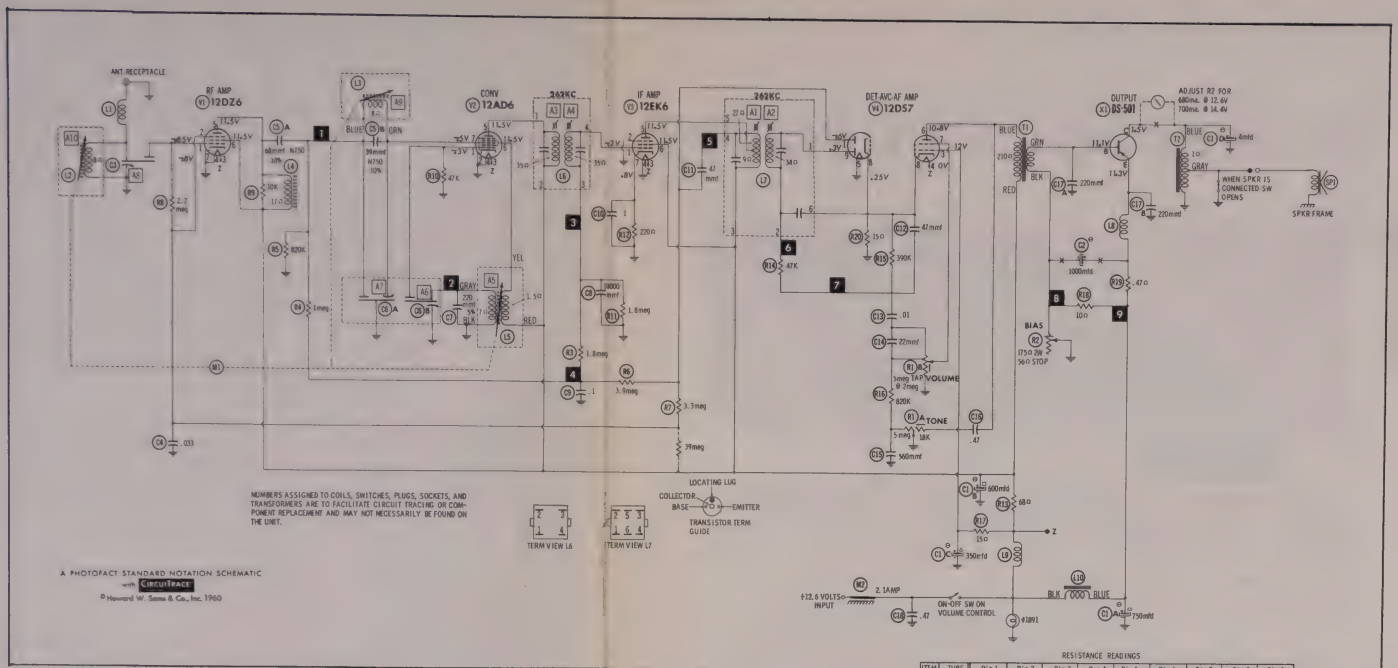
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	1192976	Tuning, Volume
Knob	1192589	Tone
Knob	1192588	Dummy
Pushbutton "B"	7275223	
Pushbutton "U"	7275224	
Pushbutton "T"	7275225	
Pushbutton "C"	7275226	
Pushbutton "K"	7275227	
Pushbutton Ass'y.	1221460	Includes Pushbutton, Front Bearing Plate and Slides
Escutcheon Ass'y.	1221462	Includes Dial, Background Plate, and Bushing, Manual
Dial Pointer	7275188	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

© Howard W. Sams & Co., Inc. 1960

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	9.4meg	8.2meg	.10	0Ω	68Ω	68Ω	0Ω		
V2	12AD6	47K	0Ω	.10	0Ω	100Ω	69Ω	820K		
V3	12EK6	1.4meg	0Ω	.10	0Ω	75Ω	68Ω	220Ω		
V4	12DS7	4.6meg	TP	15Ω	.10	0Ω	278Ω	315Ω	15Ω	440K

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

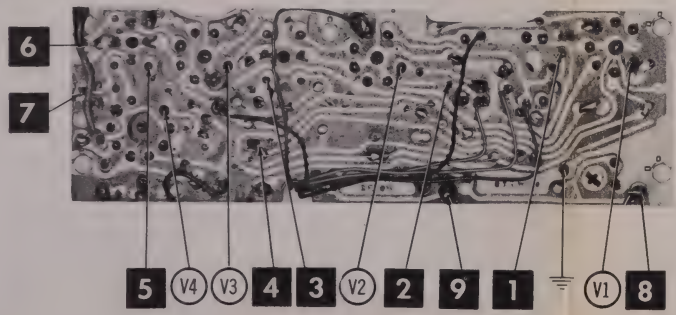
TP TIE POINT

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation on ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



A Howard W. Sams CIRCUITRACE Photo

PRINTED BOARD

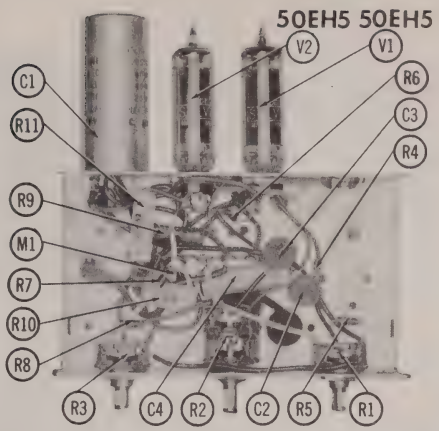
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 OTHERWISE INDICATED

PHOTOFACT® Folder

CAPITOL MODELS
919, 923A, 925A

CAPITOL MODELS
919, 923A, 925A

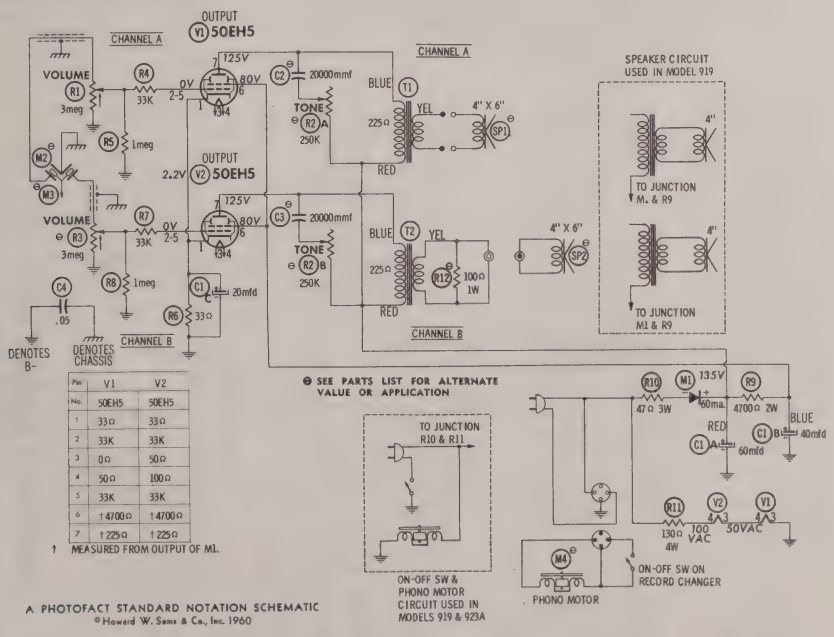
MODEL 925A



TRADE NAME	Capitol Models 919, 923A, 925A
MANUFACTURER	Capitol Records, Inc., 1 S. Webster Ave., Scranton 5, Pa.
TYPE SET	AC Operated 2 Tube Stereo Amplifier
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 27 Watts, .28 Amp. @ 117 Volts AC (Less Motor)

MODEL 919 HAS 3 SPEED MANUAL RECORD PLAYER. MODEL 923A HAS 4 SPEED MANUAL RECORD PLAYER.

MODEL 925A HAS 4 SPEED AUTOMATIC RECORD CHANGER – FOR SERVICE INFORMATION SEE MONARCH UA8, PHOTOFACT SET 381 FOLDER 11.



Pin No.	V1 50EH5	V2 50EH5
1	33Ω	33Ω
2	33K	33K
3	0Ω	50Ω
4	50Ω	100Ω
5	33K	33K
6	↑4700Ω	↑4700Ω
7	↑225Ω	↑225Ω

↑ MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1960

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JT895

SET491 FOLDER 7

PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel A Output	50EH5	V2	Channel B Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CAPITOL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	160-127	PRS3800	BBRT84215	TCT3119	TDLT-7	TVA-3455	
B	40	150							
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	20000	Note 1	BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C3	20000	Note 1	BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C4	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

Note 1. Not used in Models 919, 923A

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CAPITOL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	3meg		130-800	B-85	A47-3meg-Z	Q13-140	U57	Volume, Channel A
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	250K		133-550	B-51	AD47-250K-Z		FA254A	Tone, Channel A Note 1
B	250K			SR-51	Not Req.		RU254A	Tone, Channel B Note 1
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	3meg		130-800	B-85	A47-3meg-Z	Q13-140	U57	Volume, Channel B Note 2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

Note 1. Used in Model 925A only.
Note 2. Model 919 uses 3meg Volume with switch (Part #131-800).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	33K	
R5	1meg	
R6	33Ω	

ITEM No.	RATING	REMARKS
R7	33K	
R8	1meg	
R9	4700Ω 2W	

ITEM No.	RATING	REMARKS
R10	47Ω 3W	#129-470
R11	130Ω 4W	#121-182
R12	100Ω 1W	Note 1

♦ Capitol Part Number.
Note 1. Not used in Model 919.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	CAPITOL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2800Ω	3-4Ω	205-001	26S58	A-2928	AU-603	A-3876	26S58	S-1X	
T2	2800Ω	3-4Ω	205-001	26S58	A-2928	AU-603	A-3876	26S58	S-1X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CAPITOL PART No.	QUAM PART No.	
SP1	4"x 6"	PM	3-4Ω	229-003 *	46A1	* Used in Model 925A
SP2	4"x 6"	PM	3-4Ω	229-003 *		‡ 2 Used in Model 919
	4"	PM	3-4Ω	229-001 ‡		♦ 2 used in Model 923A
	4"	PM	3-4Ω	229-002 ♦		

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	CAPITOL PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.060A	250-001 *	2E4 *	HA 154 *	K200 *	SR200 *	* Silicon Type

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA									
	CAPITOL PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2	106①	76TS-TB		96						

① Part #ST-40P used in Models 919, 923A.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	CAPITOL PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M3	SA-075 ① (LP)		CRA-57X † or CRA-57XD †♦	① Part #ST-1 used in Models 919, 923A ② Part #ST-S used in Models 919, 923A † Jewel ♦ Diamond
	SA-250 ② (78 RPM)		CRA-57 † or CRA-57D ♦	

MISCELLANEOUS

ITEM No.	PART NAME	CAPITOL PART No.	NOTES
M4	Motor	8M59	Phono Drive (Model 925A)
	Motor Ass'y.	376-002	Phono Drive (BSR-TU9)Model 923A
	Motor Ass'y.	376-001	Phono Drive (Alliance) Model 919

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	305-004	Volume A, Model 925A
Knob	305-005	Volume B, Model 925A
Knob	305-001	Gray, Model 919, 923A
Knob	305-002	Mahogany, Model 923A
Knob	305-003	Tone, Model 925A
Cabinet	300-925AR	Red & White, Model 925A
Cabinet	300-925AT	Turquoise & White, Model 925A
Cabinet	300-923AR	Red & White, Model 923A
Cabinet	300-923AT	Turquoise & White, Model 923A
Cabinet	300-919R	Red & White, Model 919
Cabinet	300-919B	Blue & White, Model 919

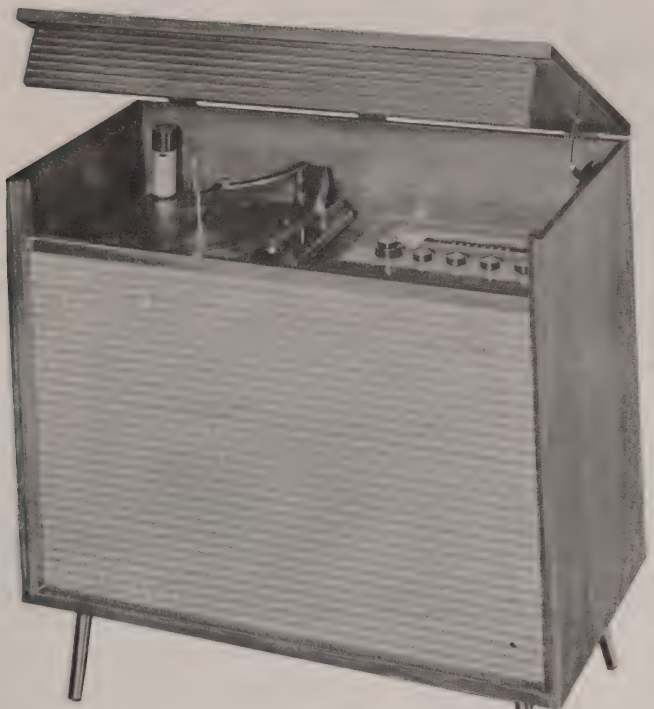
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

CORONADO MODELS RA1-9262A, RA1-9263A, RA1-9264A

CORONADO MODELS RA1-9262A, RA1-9263A, RA1-9264A



MODEL RA1-9263A

CORONADO MODELS RA1-9262A, RA1-9263A, RA1-9264A

TRADE NAME	Coronado Models RA1-9262A, RA1-9263A, RA1-9264A
SUPPLIER	Gamble-Skogmo, Inc., 15 N. Eighth Street, Minneapolis 3, Minn.
TYPE SET	AC Operated 12 Tube FM-AM Receiver, 3 Tube Channel 2 Amplifier and 4 Speed Automatic Record Changer
POWER SUPPLY	105 - 125 Volts AC, 60 Cycles RATING 1.25 Amp. @117 Volts AC (Radio)
TUNING RANGE—BROADCAST	535 — 1620KC FREQ. MOD. 88 — 108MC

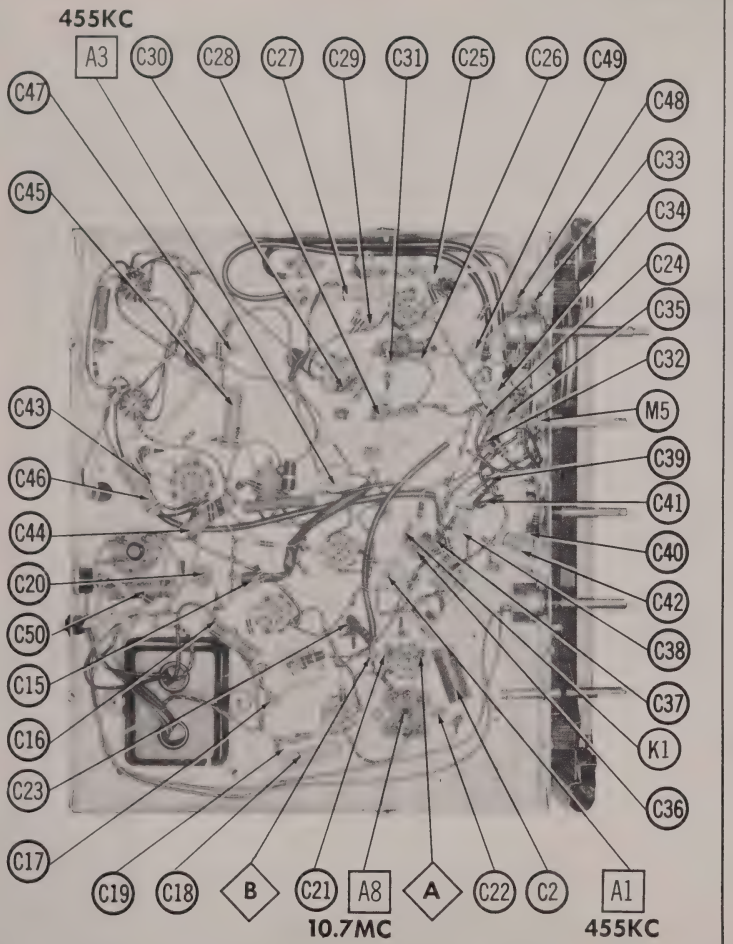
FOR SERVICE INFORMATION ON RECORD CHANGER PART #28A235 — SEE V-M1201 — PHOTOFACT SET 436 — FOLDER 18 OR RECORD CHANGER MANUAL RC-12

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

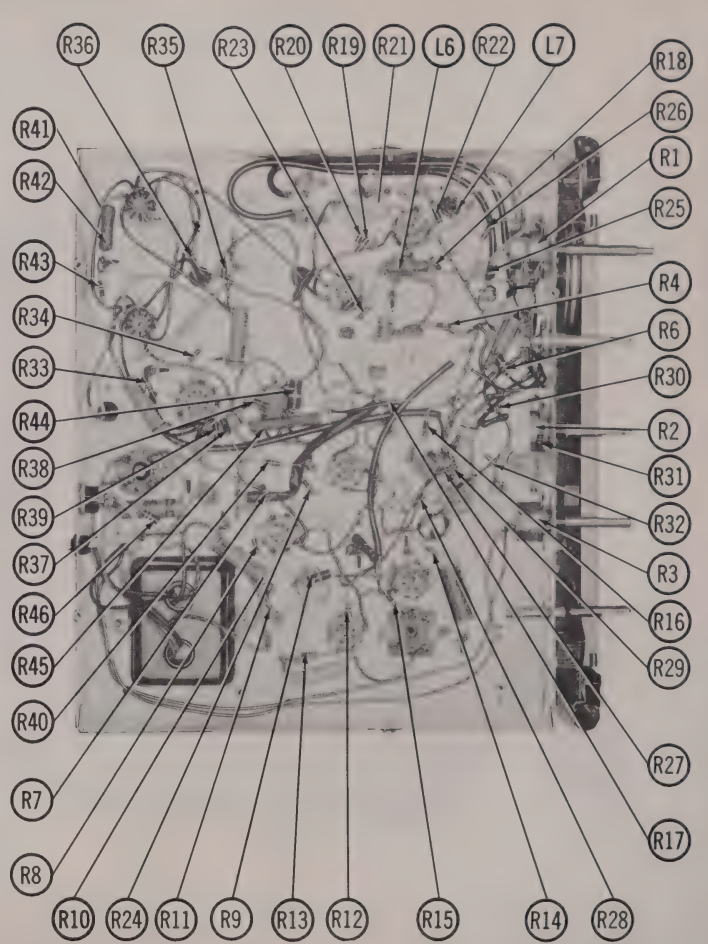
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JN772

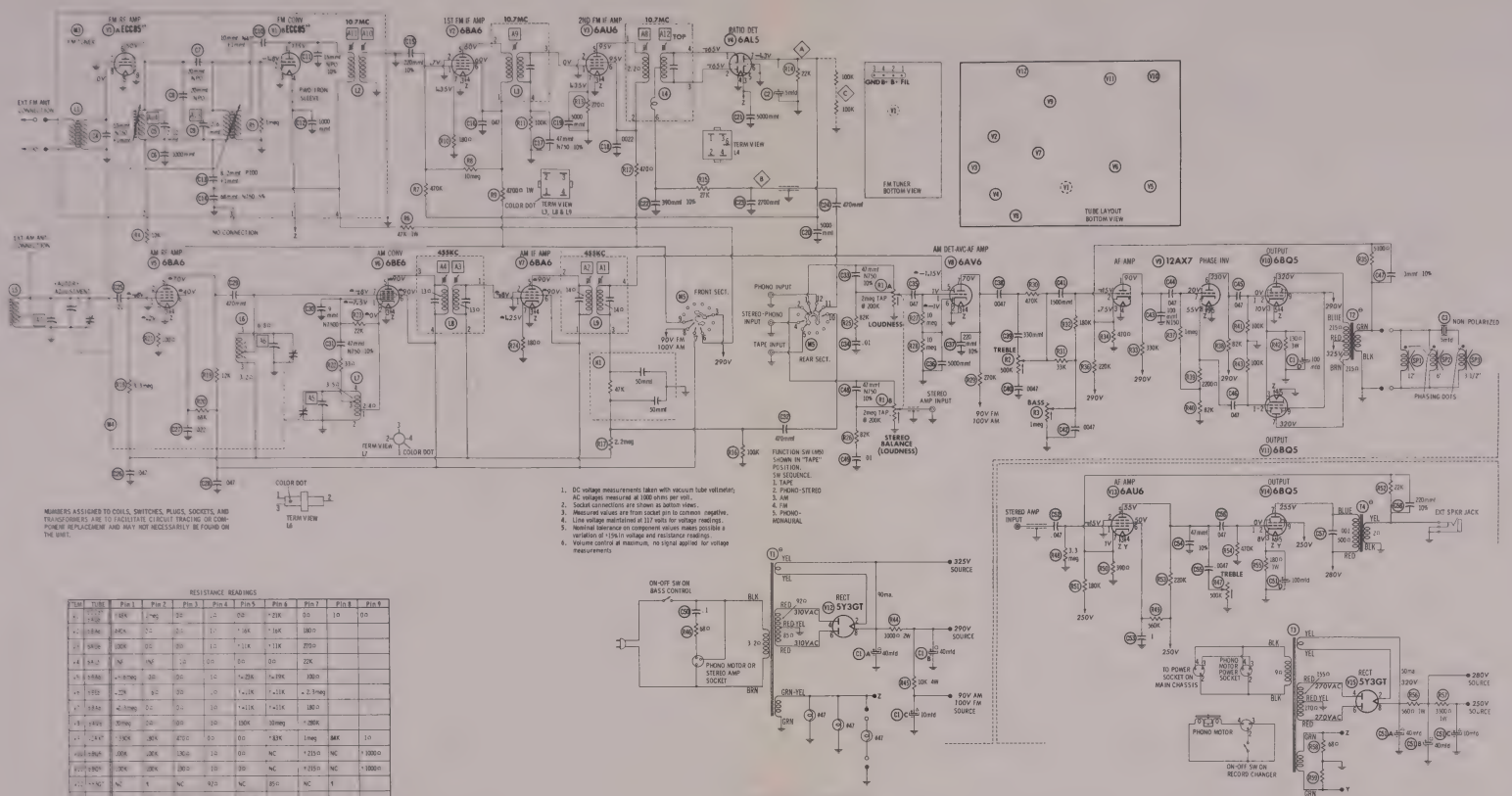
SET 491 FOLDER 8



RADIO CHASSIS BOTTOM VIEW
ALIGN., CAPACITOR & MISC. IDENT.



RADIO CHASSIS BOTTOM VIEW
RESISTOR & INDUCTOR IDENT.



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
1	6CC85	0 K Ω	0 K Ω	220 Ω	1.2 Ω	0.0 Ω	*21K Ω	0.0 Ω	1.0 Ω	0.0 Ω
2	6CC85	0 K Ω	0 K Ω	220 Ω	1.2 Ω	0.0 Ω	*16K Ω	180 Ω		
3	6AU6	100K Ω	0 Ω	220 Ω	1.2 Ω	*11K Ω	*11K Ω	270 Ω		
4	6AU6	NC	NC	1.2 Ω	0.0 Ω	0.0 Ω	0.0 Ω	22K Ω		
5	6AL5	4.8 meg Ω	220 Ω	0.0 Ω	1.2 Ω	*.22K Ω	*.19K Ω	100 Ω		
6	6AL5	4.8 meg Ω	220 Ω	0.0 Ω	1.2 Ω	*.11K Ω	*.11K Ω	2.3 meg Ω		
7	6BA6	4.8 meg Ω	220 Ω	0.0 Ω	1.2 Ω	*.11K Ω	*.11K Ω	180 Ω		
8	6BA6	4.8 meg Ω	220 Ω	0.0 Ω	1.2 Ω	*.11K Ω	*.11K Ω	180 Ω		
9	6BE6	4.8 meg Ω	220 Ω	0.0 Ω	1.2 Ω	150K Ω	10 meg Ω	*.280K Ω		
10	6BA6	4.8 meg Ω	330K Ω	330K Ω	470 Ω	0.0 Ω	*.83K Ω	1 meg Ω	.66K Ω	1.0 Ω
11	6BA6	4.8 meg Ω	330K Ω	330K Ω	470 Ω	0.0 Ω	NC	*.215 Ω	NC	*.1000 Ω
12	6AV6	4.8 meg Ω	330K Ω	330K Ω	470 Ω	1.0 Ω	NC	*.215 Ω	NC	*.1000 Ω
13	12AX7	NC	1 Ω	NC	92.0 Ω	NC	85.0 Ω	NC	1 Ω	
14	6BQ5	1.3 meg Ω	0.0 Ω	38.0 Ω	38.0 Ω	**.220K Ω	**.560K Ω	340 Ω		
15	6BQ5	475K Ω	475K Ω	180 Ω	38.0 Ω	38.0 Ω	NC	**.1000 Ω	NC	**.1800 Ω
16	6AU6	NC	1 Ω	NC	235 Ω	NC	170 Ω	NC	1 Ω	

1. THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.

➡ MEASURED IN "AM" POSITION.

* MEASURED FROM PIN 8 OF V12.

** MEASURED FROM PIN 8 OF V13.

NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1960

CORONADO MODELS RA1-9262A, RA1-9263A, RA1-9264A

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1 thru A4, A9...	GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989 WALSCO #2515, 2531, 2532
A5, A6, A7.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A8, A12.....	GENERAL CEMENT #9091, 9091-L WALSCO #2542
A10, A11.....	GENERAL CEMENT #8282, 8606, 8606-L, 9091 WALSCO #2526, 2541, 2542, 2543, 2544
A13, A14.....	GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291 WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru .1mfd to pin 1 (grid) of AM RF Amp. Low side to chassis.	1620KC	"	"	A5	"
3.	"	1400KC	Tune to 1400KC Signal.	"	A6	Set pointer to 1400KC and adjust for maximum deflection while rocking tuning gang.
4.	High side thru 50mmf to AM external antenna lead. Low side to chassis.	"	"	"	A7	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	Across FM antenna terminals with 120Ω in each lead.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	Across FM Antenna terminals with 120Ω in each lead.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11	Disconnect stabilizing capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C2.
6.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A12	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 120Ω in each lead.	108MC (Unmod.)	(FM) 108MC	DC probe to point Ⓐ. Common to chassis.	A13	Adjust for maximum deflection.
8.	"	98MC	98MC	"	A14	"

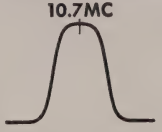


FIG. 1

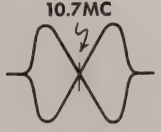


FIG. 2

RADIO PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• CBS • GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •	
V1	FM RF Amp. -FM Conv.	ECC85/6AQ8(6BQ7A)*	V7	AM IF Amplifier	6BA6
V2	1st FM IF Amp.	6BA6	V8	AM Det. -AVC-AF Amp.	6AV6
V3	2nd FM IF Amp.	6AU6	V9	AF Amp. -Phase Inverter	12AX7
V4	FM Ratio Detector	6AL5	V10	Output	6BQ5 (EL84/6BQ5) *
V5	AM RF Amp.	6BA6	V11	Output	6BQ5 (EL84/6BQ5) *
V6	AM Converter	6BE6	V12	Rectifier	5Y3GT

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400	45X441	AFH4-87	D0660	FP431.7	TMQ-100	TVL-4747	
B	■40	400							
C	▲10	400							
D	100	25							
C2	5	50	45X423	PRS1310	BBR5-50	TC30	TD5-50	TVA1303	
C3	5	10NP	45X426	NP-PRS7405	BBR8-150 †	TCN105		TVAS-1110 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	10 N750 ± 1mmf		N750-SI 10	TCN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C5	2-10	#G-E2974						
C6	1000		SI 1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C7	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C8	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C9	2-6	#G-E2975						
C10	10 N470 ± 1mmf	#G-E2980				*		
C11	15 NPO 10%		NPO-SI 15	TCZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C12	1000		SI 1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C13	8.2 P100 ± 1mmf	#G-E2978						
C14	68 N750 5%			TCN-68	C10Q68U	CCTN-680	CN7-468	C10Q68
C15	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C16	.047 400		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C17	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C18	.0022 400V		P488N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C19	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C20	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C21	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C22	390 10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C23	2700		SI 2700	DD-272	BYA10D27	CCD-272	GP227	10TS-D27
C24	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C25	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C26	.047 200V		P288N-047	DD-503	CUB3S47	4DP-3-473	GEM-4147	2TM-S47
C27	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C28	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C29	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C30	9 N7500							
C31	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C32	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	—
C33	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C34	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C35	.047 200V		P288N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	2TM-S47
C36	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C37	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C38	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C39	330		SI 330	D6-331	L10T33	CCD-331	GP333	10TS-T33
C40	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C41	1500		SI 1500	D6-152	BYA10D15	CCD-152	GP215	5HK-D15
C42	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C43	100 N150					*		10TCP-T10
C44	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C45	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C46	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C47	680 10%		DI-680	DD-681	IR5T68	CCD-681	GP368	10TS-T68
C48	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C49	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C50	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

\# Coronado Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	36X410					Loudness
	200K Tap							
B	2meg	½						Stereo Balance (Loudness)
	200K Tap							
R2A	500K	½	40X433	B-60	A47-500K-Z	Q13-133	U48	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	1meg	½	40X434	B-70-S	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R4	10K		R19	12K		R34	470Ω	
R5	1meg		R20	68K		R35	5100Ω	
R6	47K 1W		R21	100Ω		R36	220K	
R7	470K		R22	33Ω		R37	1meg	
R8	10meg		R23	22K		R38	82K	
R9	4700Ω 1W		R24	180Ω		R39	2200Ω	
R10	180Ω		R25	82K		R40	82K	
R11	100K		R26	82K		R41	100K	
R12	470Ω		R27	10meg		R42	130Ω 3W	
R13	270Ω		R28	10meg		R43	100K	
R14	22K		R29	270K		R44	1000Ω 2W	
R15	27K		R30	470K		R45	10K 4W	
R16	100K		R31	33K		R46	68Ω	
R17	2.2meg		R32	180K				
R18	33meg		R33	330K				

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CORONADO PART No.	REPLACEMENT DATA
K1	AM Diode RF Filter	50mmf, 50mmf, 47K	76X1	Aerovox PA-99 Centralab PC-52 Cornell-Dubilier 1117M2 Sprague D-3

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		CORONADO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Trans.	G-EK2987						
L2	1st FM IF Trans.	G-EK2989						
L3	2nd FM IF Trans.	9A2309	16-3487	16-3487	FM-254	1463		
L4	Ratio Det.	9A2260	17-3487	17-3487	FM-252	1453		
L5	Loopstick	9A2437	14-7002	14-7002	BC-418			
L6	AM RF Coil	9A2289						
L7	AM Osc. Coil	9A2406						
L8	1st AM IF Trans.	9A2392	16-6758	16-6758	BC-352	RF-1		
L9	2nd AM IF Trans.	9A2393	16-6758	16-6758	BC0353	RF-2		

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .82A	620 VCT @.090A	5V@ 2A	53X365-A ①	22R06			PM-8422	22R06	
	SEC. 3	SEC. 4	SEC. 5							
	6.3V@ 4.6A									

① Alternate Part #53X365.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7800Ω CT	6-8Ω	51X202-A①	24S42	A-2905	AU-609②	A-3880	24S42	S-57Z②	① Drill New Mounting Hole. ② Alternate Part #51X202.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CORONADO PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	12A564	12A1Z7, 9	
SP2	6"	PM	24-26Ω	12A567	6A1Z25	
SP3	3½"	PM	6-8Ω	12A566	3AQ7	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA									
	CORONADO PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1	13T	13T	Not Req.	13	Not Req.			10T2-S	Not Req.

PHONO NEEDLE

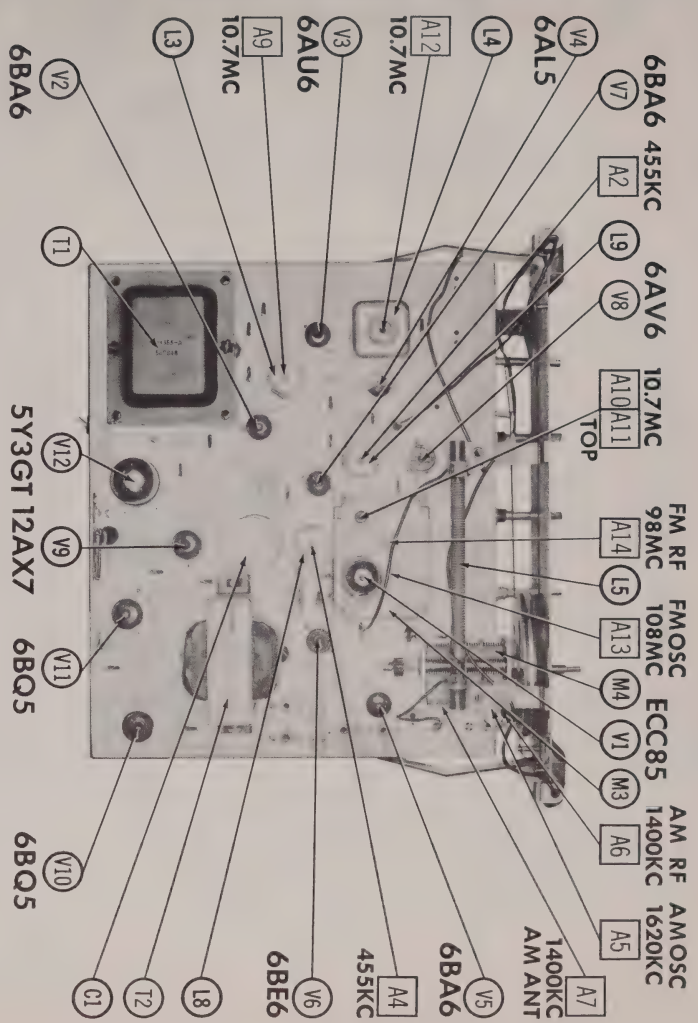
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

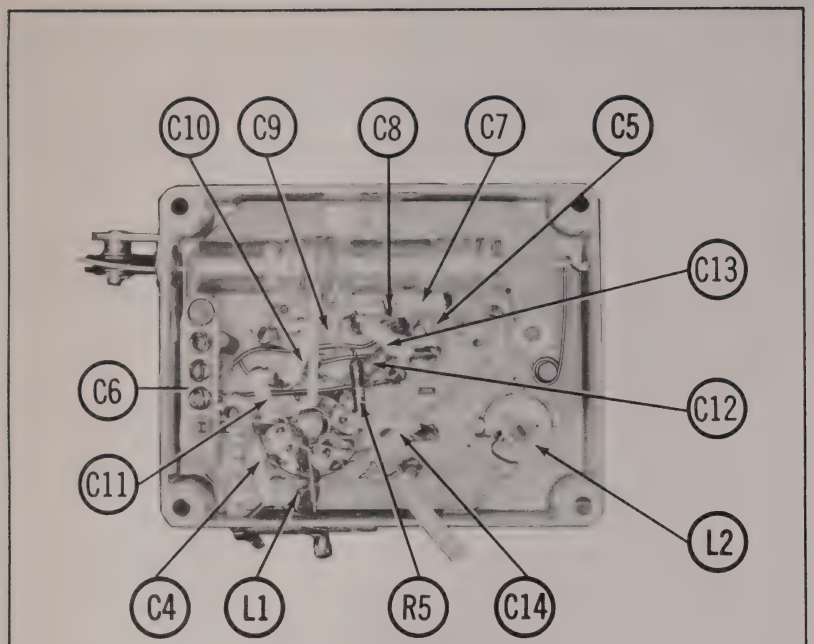
ITEM No.	REPLACEMENT DATA			REMARKS
	CORONADO PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M2		* W-204DS †♦ or * W-204DD-1♦	* A-44X † or * A-44XSD †♦ or * A-44XDD♦	† Jewel ♦ Diamond * Includes Cartridge.

MISCELLANEOUS

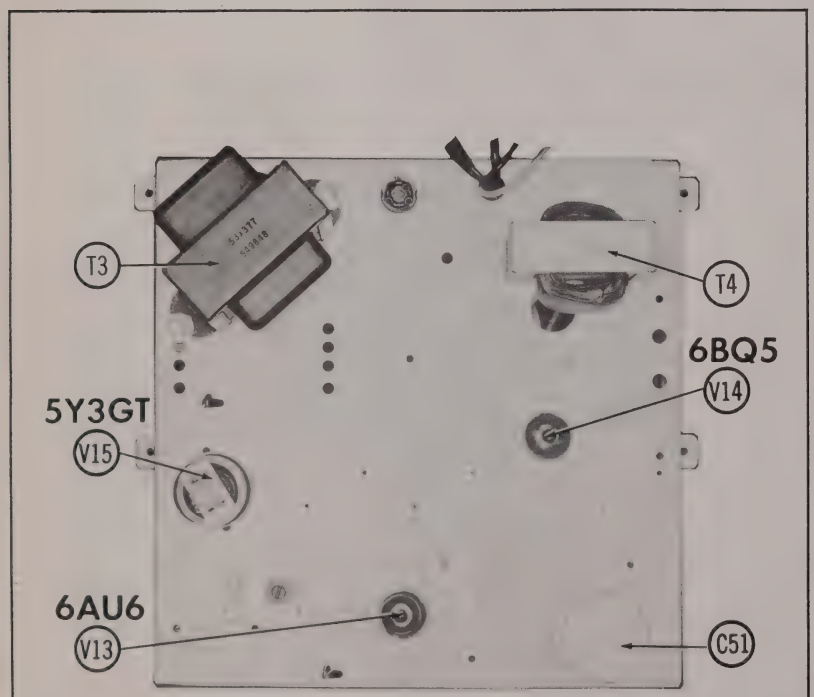
ITEM No.	PART NAME	CORONADO PART No.	NOTES
M3	FM Tuner	25A1163	Complete
M4	Tuning Cap.	14A234	AM, 3 Gang (Ant. 40-515mmf, RF 18-240mmf, Osc. 21-110mmf)
M5	Switch	2A501	Function Selector

RADIO CHASSIS - TOP VIEW





FM RF SUBCHASSIS



AMP CHASSIS - TOP VIEW

AMP PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V13 V14	AF Amp. Output	6AU6 6BQ5 (EL84/6BQ5) *

ITEM No.	USE	TYPE
V15	Rectifier	5Y3GT

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C51A	▲40	400	45X441	AFH4-87	D0660	FP431.7	TMQ-100	TVL-4747	
B	■40	400							
C	▲10	400							
D	100	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C52	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C53	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C54	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C55	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C56	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C57	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-421	6TM-D1
C58	220 10%		DI-220	DD-221	L10T22	CCD-221	GP221	10TS-T22

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R47A	500K	½	40X461	AB-60	B47-500K-Z	B13-133	U48	Treble (Stereo)
B	Shaft			AK-1	Not Req.	SK6	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R48	3.3meg	
R49	560K	
R50	390Ω	
R51	180K	

ITEM No.	RATING	REMARKS
R52	22K	
R53	220K	
R54	470K	
R55	180Ω 1W	

ITEM No.	RATING	REMARKS
R56	560Ω 1W	
R57	3300Ω 1W	
R58	68Ω	
R59	82Ω	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T3	117V ⓐ .42A	540 VCT ⓐ .050A	5V ⓐ 2A	53X377	24R20U	P-3154①		PC-8405	24R20U	R-12A
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ⓐ 1.1A									

① Drill New Mounting Hole (s)

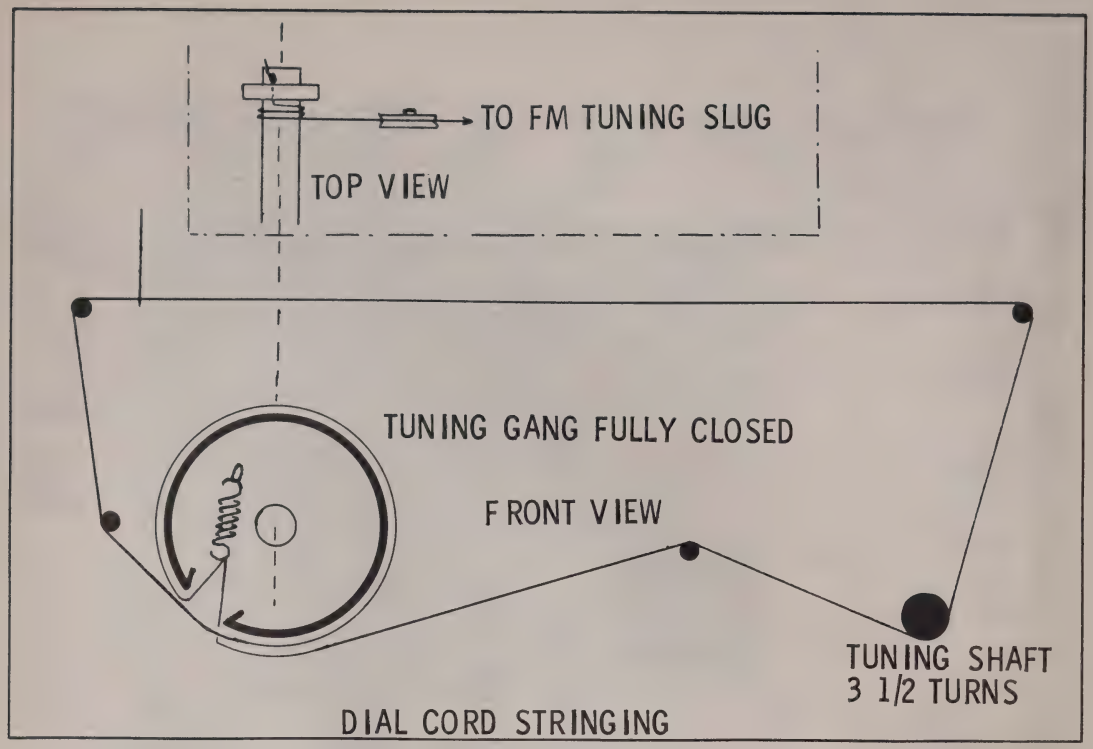
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	7600Ω	3-4Ω	51X200-A①	24S14	A-2904②	AU-609	A-3824	24S14	S-57Z	① Alternate Part #51X200. ② Drill New Mounting Hole

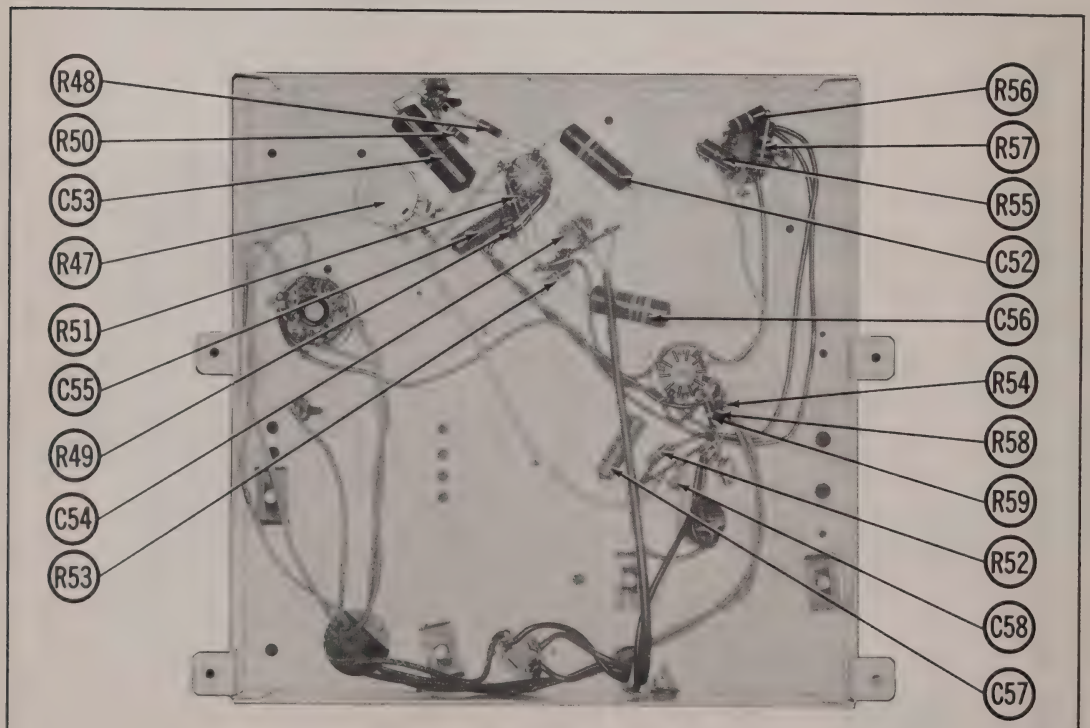
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	10A959-1	Tuning, Bass, Treble, & Function Selector
Knob	10A969	Volume, Large
Knob	10A970	Volume, Small
Dial Pointer	15X285-2	
Dial Glass	58X814	
Leg (Cabinet)	81X24-4	Mahogany
Leg (Cabinet)	81X24-5	Oak
Leg (Cabinet)	81X24-6	Walnut



DIAL CORD STRINGING



AMP CHASSIS — BOTTOM VIEW

PHOTOFACT® Folder with CIRCUITRACE®

MOTOROLA MODELS A1B, A1N, A1R, A1W (Ch. HS-744)

MOTOROLA MODELS A1B, A1N, A1R, A1W (Ch. HS-744)

MODEL A1W

MOTOROLA MODELS A1B, A1N, A1R, A1W (Ch. HS-744)

TRADE NAME	Motorola Models A1B, A1N, A1R, A1W (Ch. HS-744)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC-DC Operated 5 Tube AM Receiver
POWER SUPPLY	110 - 120 Volts AC-DC
TUNING RANGE—BROADCAST	535 — 1620KC RATING 28 Watts, .27 Amp. @117 Volts AC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1 thru A4.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

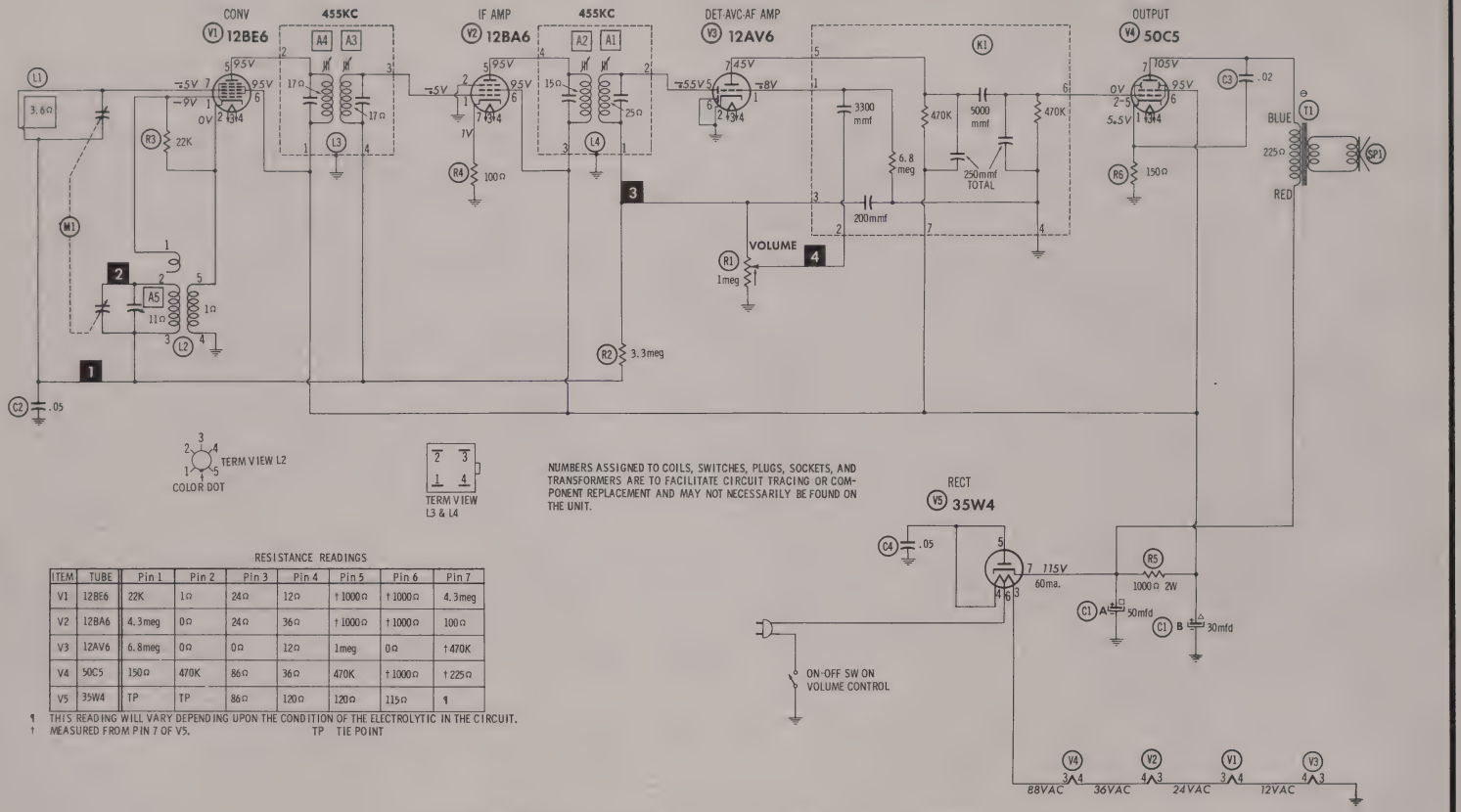
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to B-.	455KC (400~ Mod.)	Tuning Gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1620KC	"	"	A5	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KG036

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 491 FOLDER 9



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	1Ω	24Ω	12Ω	†1000Ω	†1000Ω	4.3meg
V2	12BA6	4.3meg	0Ω	24Ω	36Ω	†1000Ω	†1000Ω	100Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	1meg	0Ω	†470K
V4	50C5	150Ω	470K	86Ω	36Ω	470K	†1000Ω	†225Ω
V5	35W4	TP	TP	86Ω	120Ω	120Ω	115Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

©Howard W. Sams & Co., Inc. 1960

MOTOROLA MODELS A1B, A1N, A1R, A1W (Ch. HS-744)

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12BE6	V4	Output	50C5
V2	IF Amplifier	12BA6	V5	Rectifier	35W4
V3	Det.-AVC-AF Amp.	12AV6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■50	150	23B632015	PWH2-15-05	B0150 ♣	PWP213.1		PCL-2432	
B	▲30	150							

♣ Use printed circuit adapters #55277 & 55278.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C3	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S2
C4	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	½	18B643755					Volume
B	Switch							Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	3.3meg	
R3	22K	

ITEM No.	RATING	REMARKS
R4	100Ω	
R5	1000Ω 2W	

ITEM No.	RATING	REMARKS
R6	150Ω	

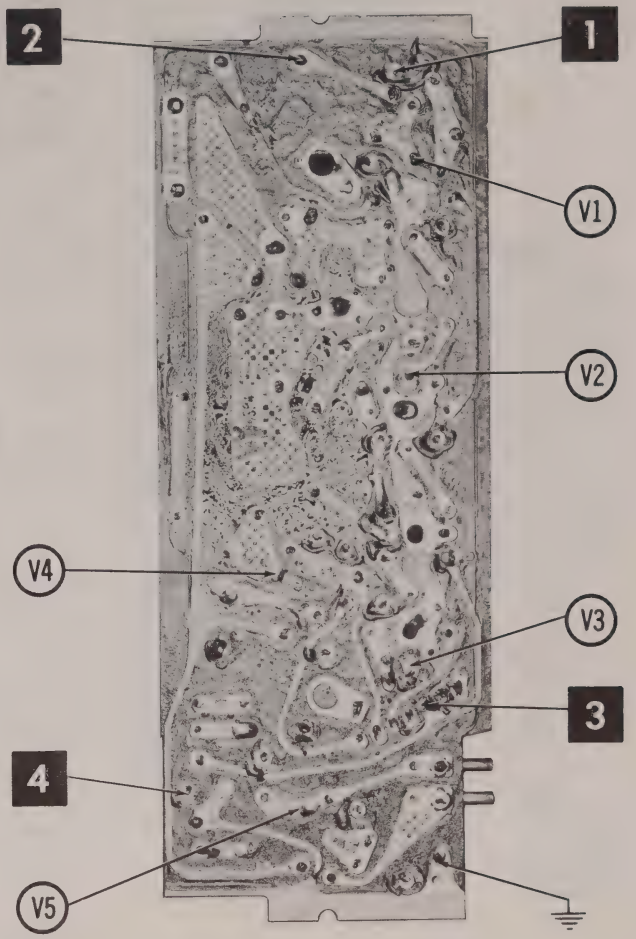
COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		MOTOROLA PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Ant.	24C643759						
L2	Osc. Coil	24B643864						
L3	1st IF Trans.	24C643901	16-6780	16-6780	BC-348	13-PC1	RF-4	
L4	2nd IF Trans.	24K643902	16-6780	16-6780	BC-349	13-PC2	RF-4	

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



MOTOROLA MODELS AIB, AIN, AIR, AIW (Ch. HS-744)

FOLDER 9

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2800Ω	3-4Ω	25B643754-A ①	22S46				22S46		

① Alternate Part #25B643754

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	50C643906	4A1R	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Audio Coupling	200mmf, 250mmf, 3300mmf, 5000mmf, 470K, 470K, 6.8meg	51B643849	Aerovox PA-512-3 Centralab PC-158 Sprague DT-5

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Tuning Cap Printed Board	19B643753 1V644535	2 Gang. Less All Components, Includes Interlock

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

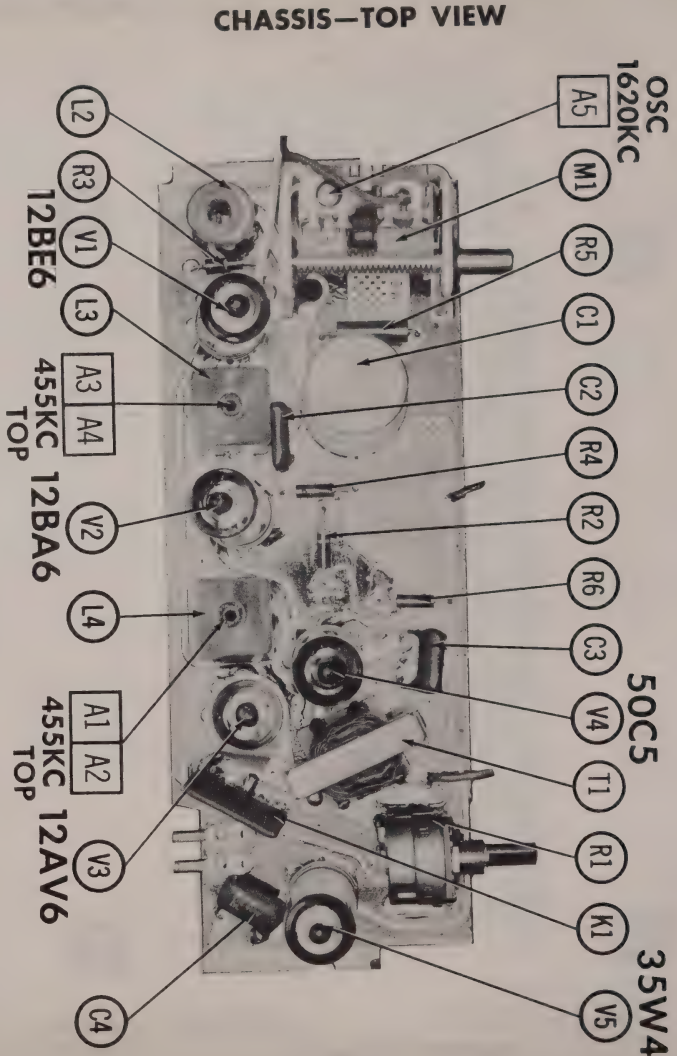
NAME	PART NO.	DESCRIPTION
Knob	36C643758	Tuning, Models A1B, A1R
Knob	36K643943	Tuning, Models A1N, A1W
Knob	36K643941	Volume, Models A1B, A1R
Knob	36K643942	Volume, Models A1N, A1W
Cabinet Assembly	1V644531	Cerulean Blue, Model A1B
Cabinet Assembly	1V644532	Expresso Brown, Model A1N
Cabinet Assembly	1V644533	Regimental Red, Model A1R
Cabinet Assembly	1V644534	Antique White, Model A1W

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW

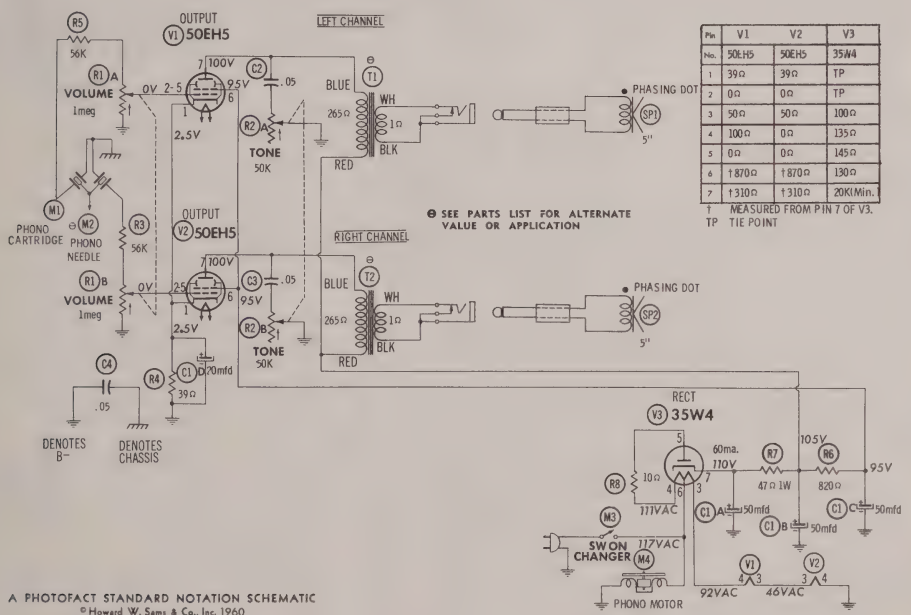


PHOTOFACT® Folder

MOTOROLA MODEL SF14SL (Ch. HS-761)

MOTOROLA MODEL
SF14SL (Ch. HS-761)

TRADE NAME	Motorola Model SF14SL (Ch. HS-761)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC Operated 3 Tube Stereo Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 26 Watts, .26 Amp. @117 Volts AC (Less Motor)



Pin No.	V1 50EH5	V2 50EH5	V3 35W4
1	39Ω	39Ω	TP
2	0Ω	0Ω	TP
3	50Ω	50Ω	100Ω
4	100Ω	0Ω	135Ω
5	0Ω	0Ω	145Ω
6	†870Ω	†870Ω	130Ω
7	†310Ω	†310Ω	20K(Min.

† MEASURED FROM PIN 7 OF V3.
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1960

MOTOROLA MODEL
SF14SL (Ch. HS-761)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KR032

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET491 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel Output	50EH5	V3	Rectifier	35W4
V2	Right Channel Output	50EH5			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	23K644210		BBRQ55515C	WQ250		TVA8-4553 *	
B	50	150							
C	50	150							
D	20	25							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C3	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C4	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg		18B645047					Volume, Left Channel
B	1meg							Volume, Right Channel
R2A	50K		18B645046	AB-31	AD47-50K-S		FA54L	Tone, Left Channel
B	50K			SR-31	Not Req.		RU54L	Tone, Right Channel
C	Shaft			AK-8	RS-3/16		CS687 & DS-37	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	56K	
R4	39Ω	

ITEM No.	RATING	REMARKS
R5	56K	
R6	820Ω	

ITEM No.	RATING	REMARKS
R7	47Ω 1W	
R8	10Ω	

TRANSFORMER (AUDIO OUTPUT)

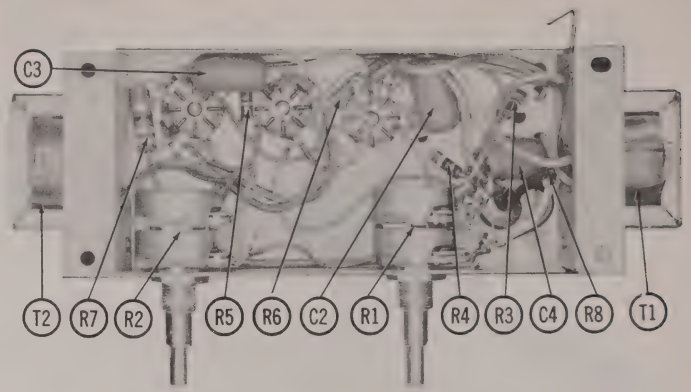
ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2800Ω	6-8Ω	25C645216-A ①							
T2	2800Ω	6-8Ω	25C645216-A ①							

① Alternate Part #25C645216

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	5"	PM	6-8Ω	50K645232	5A1Z7.8	
SP2	5"	PM	6-8Ω	50K645232	5A1Z7.8	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	MOTOROLA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M1	59B645397 (Includes M2)			96					

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	MOTOROLA PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M2	47K645457 † (LP)			† Jewel
	47K645458 † (78 RPM)			

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Switch	40K646066	Off-On, Includes Bracket
M4	Motor Ass'y.	59K644842	Less Turntable Assembly
	Tone Arm	36K645442	Completer, Less Cartridge

CABINETS & CABINET PARTS

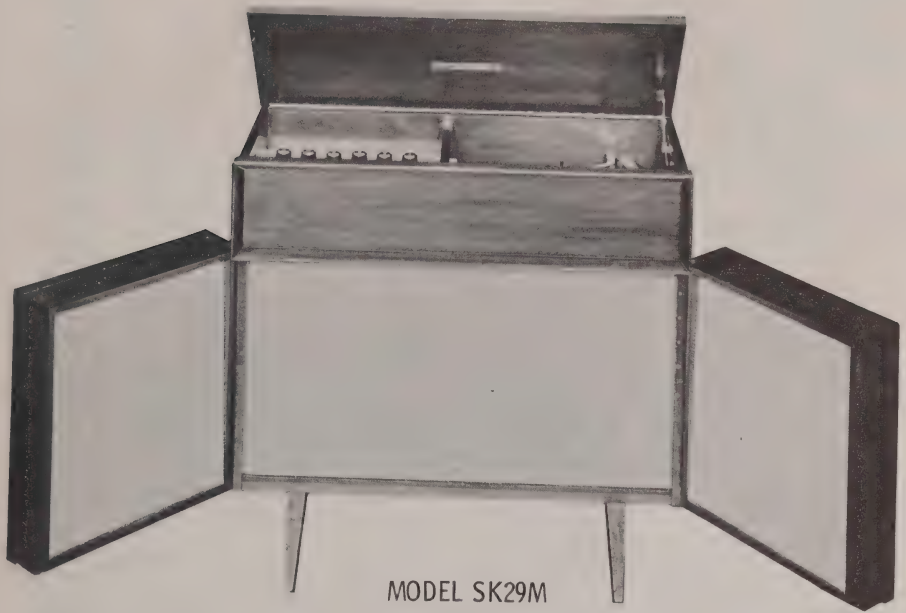
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

MOTOROLA MODELS SK28M, W, SK29B, M, W, SK30B, M, MC, W, SK31B, CW, M (Ch. HS-768, HS-769, HS-774, HS-793)



MODEL SK29M

MOTOROLA MODELS SK28M, W, SK29B, M, W, SK30B, M, MC, W, SK31B, CW, M (Ch. HS-768, HS-769, HS-774, HS-793)

TRADE NAME	Motorola Models SK28B, SK28M, SK28W, SK29B, SK29M, SK29W, SK30B, SK30M, SK30MC, SK30W, SK31B, SK31CW, SK31M (Preamp. Ch. HS-769, HS-774; Amp. Ch. HS-768, HS-793)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC Operated 2 Tube Stereo Preamplifier, 7 Tube Stereo Amplifier and 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 120 Watts, 1.1 Amp. @117 Volts AC (Less Motor)

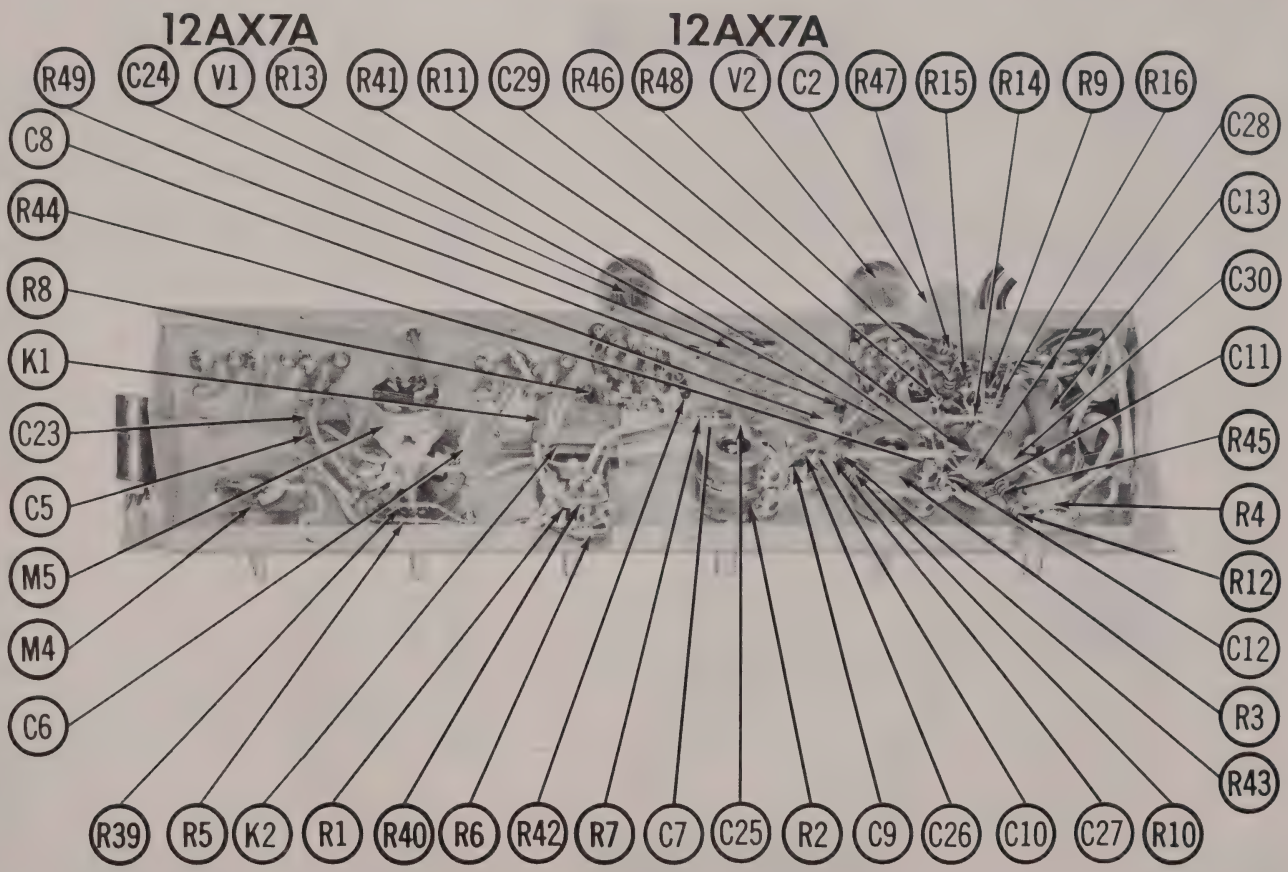
FOR SERVICE INFORMATION ON RECORD CHANGER VM29RC — SEE SIMILAR V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

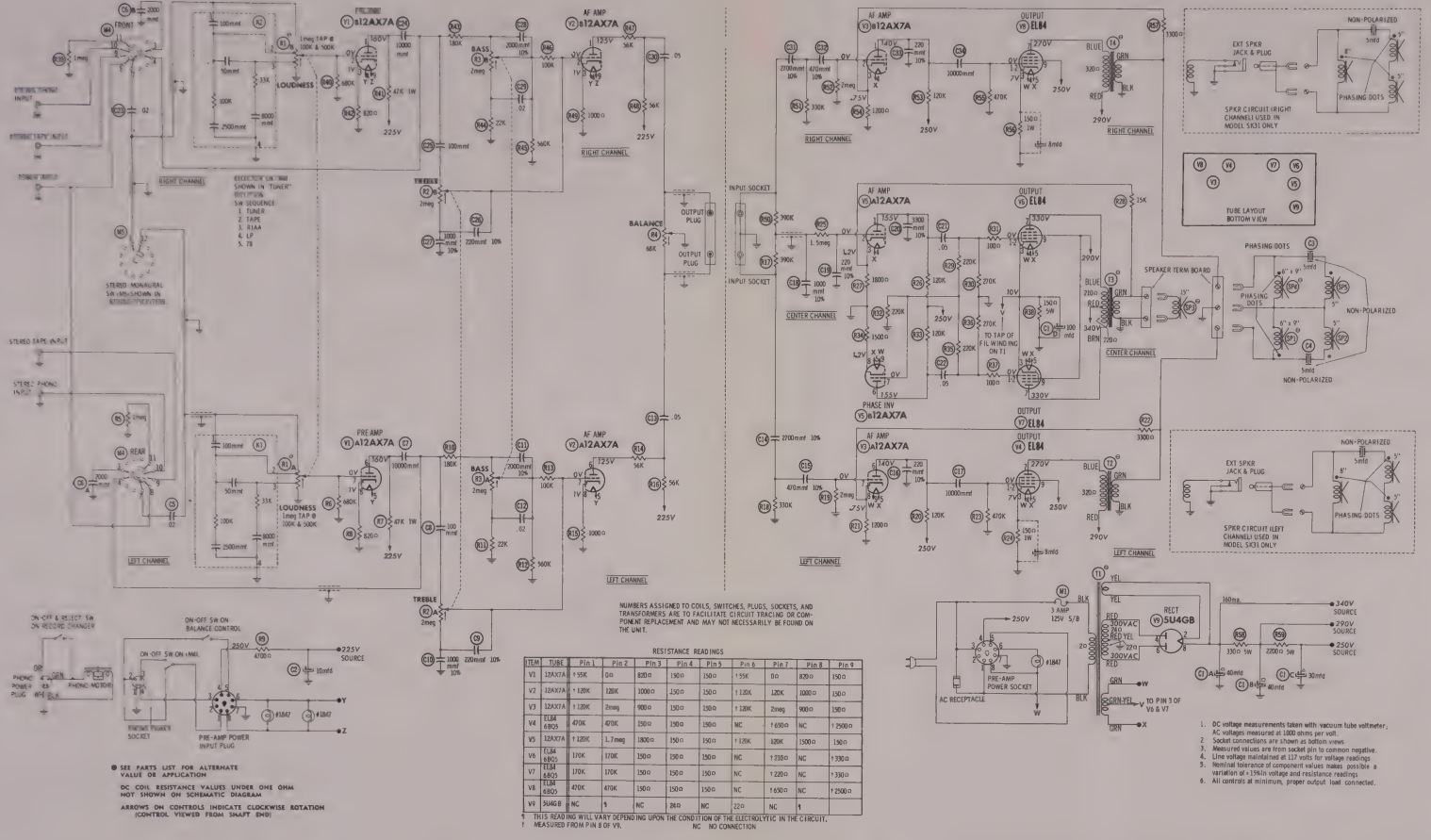
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KT039

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET491 FOLDER 11



PREAMP CHASSIS



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7A	†55K	0Ω	820Ω	150Ω	150Ω	†55K	0Ω	820Ω	150Ω
V2	12AX7A	†120K	120K	1000Ω	150Ω	150Ω	†120K	120K	1000Ω	150Ω
V3	12AX7A	†120K	2meg	900Ω	150Ω	150Ω	†120K	2meg	900Ω	150Ω
V4	EL84 6BQ5	470K	470K	150Ω	150Ω	150Ω	NC	†650Ω	NC	†2500Ω
V5	12AX7A	†120K	1.7meg	1800Ω	150Ω	150Ω	†120K	120K	1500Ω	150Ω
V6	EL84 6BQ5	170K	170K	150Ω	150Ω	150Ω	NC	†330Ω	NC	†330Ω
V7	EL84 6BQ5	170K	170K	150Ω	150Ω	150Ω	NC	†220Ω	NC	†330Ω
V8	EL84 6BQ5	470K	470K	150Ω	150Ω	150Ω	NC	†650Ω	NC	†2500Ω
V9	5U4GB	NC	¶	NC	2kΩ	NC	22Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE C-CIRCUIT.
† MEASURED FROM PIN 8 OF V9.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1960

MOTOROLA MODELS SK28M, W, SK29B, M, W, SK30B, M, MC, W, SK31B, CW, M (Ch. HS-768, HS-769, HS-774, HS-793)

AMP CHASSIS — BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Left Channel Preamp. - Right Channel Preamp.	12AX7A
V2	Left Channel AF Amp. - Right Channel AF Amp.	12AX7A
V3	Left Channel AF Amp. - Right Channel AF Amp.	12AX7A
V4	Left Channel Output	EL84/6BQ5
V5	Center Channel AF Amp. - Phase Inverter	12AX7A
V6	Center Channel Output	EL84/6BQ5
V7	Center Channel Output	EL84/6BQ5
V8	Right Channel Output	EL84/6BQ5
V9	Rectifier	5U4GB

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400	23K645404	AFH4-57-75	C0350	FP421.8	TMT-40	TVL-3787	
B	■40	400			BBR100-25		TD-100-25	TVA-1207	
C	▲30	400							
D	100	25							
C2	10	400	23K642196	AFH1-44	A0440	FP142			
C3	5	10NP	23B643970	NP-PRS7405	BBR10-25 †	TCN105		TVANS-1110 *	
C4	5	10NP	23B643970	NP-PRS7405	BBR10-25 †	TCN105		TVANS-1110 *	

† Use two units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

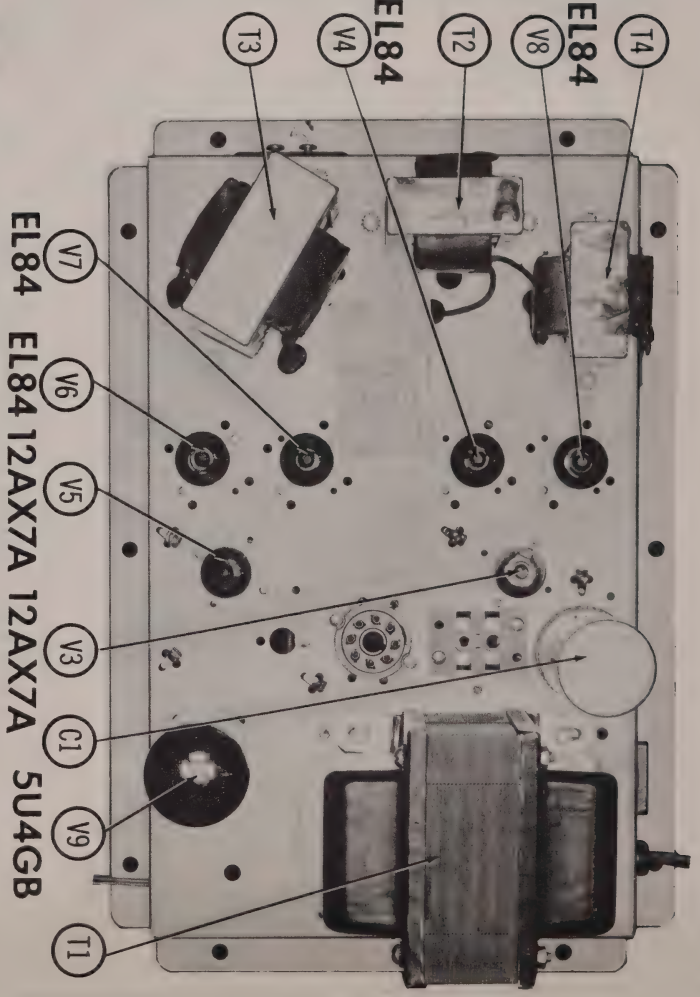
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S2
C6A	2000		BPD-2X002	DD3-202	BYD6DD2	CCD-202	B2X220	5HK-2D20
B	2000					CCD-202		
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C8	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS•T10
C9	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T20
C10	1000 10%		DI-1000	DD-102	1R5D1	CCD-102	GP210	10TS-D10
C11	2000 10%		DI-2000	DD-202	1R5D2	CCD-202	GP220	10TS-D20
C12	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S2
C13	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C14	2700 10%		DI-2700		PM6D3	CCD-272	GEM-1623	10TS-D27
C15	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C16	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C18	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C19	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C20	3300 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C21	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C22	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C23	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S2
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C25	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C26	220 10%		DI-220	DD-221	L10T22	CCD-220	GP322	10TS-T22
C27	1000 10%		DI-1000	DD-102	1R5D1	CCD-102	GP210	10TS-D10
C28	2000 10%		DI-2000	DD-202	1R5D2	CCD-202	GP220	10TS-D20
C29	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S2
C30	.05 400V		P488N-05	DD-503	CUB3S5	4DP-3-503	GEM-415	4TM-S5
C31	2700 10%		DI-2700		PM6D3	CCD-272	GEM-1623	10TS-D27
C32	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C33	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10

AMP CHASSIS - TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg *		1V643899 †					Loudness, Left Channel
B	1meg *							Loudness, Right Channel
R2A	2meg		18A642217	B-76	AD47-2meg-Z		FA26A	Treble, Left Channel
B	2meg			SR-76	Not Req.		RU26A	Treble, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R3A	2meg		18A642217	B-76	AD47-2meg-Z		FA26A	Bass, Left Channel
B	2meg			SR-76	Not Req.		RU26A	Bass, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R4A	68K		18C645278					Balance
B	Switch							Power Off-On

* Taps at 100K and 500K.
† Includes K1 and K2. (Control Part #18K643897)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	1meg	
R6	680K	
R7	47K 1W	
R8	820Ω	
R9	4700Ω	
R10	180K	
R11	22K	
R12	560K	
R13	100K	
R14	56K	
R15	1000Ω	
R16	56K	
R17	390K	
R18	330K	
R19	2meg	
R20	120K	
R21	1200Ω	
R22	3300Ω	
R23	470K	

ITEM No.	RATING	REMARKS
R24	150Ω	
R25	1.5meg	
R26	120K	
R27	1800Ω	
R28	15K	
R29	220K	
R30	270K	
R31	100Ω	
R32	220K	
R33	120K	
R34	1500Ω	
R35	220K	
R36	270K	
R37	100Ω	
R38	150Ω 5W	
R39	1meg	
R40	680K	
R41	47K 1W	
R42	820Ω	

ITEM No.	RATING	REMARKS
R43	180K	
R44	22K	
R45	560K	
R46	100K	
R47	56K	
R48	56K	
R49	1000Ω	
R50	390K	
R51	330K	
R52	2meg	
R53	120K	
R54	1200Ω	
R55	470K	
R56	150Ω 1W	
R57	3300Ω	
R58	330Ω 5W	
R59	2200Ω 5W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Loudness Comp.	50mmf, 100mmf, 2500mmf, 8000mmf, 33K, 100K	51K643898 (Part of R1)	
K2	Loudness Comp.	50mmf, 100mmf, 2500mmf, 8000mmf, 33K, 100K	51K643898 (Part of R1)	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RATING SEC. 4	RATING SEC. 5	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ 1.1A	600 VCT ⓐ .160A	5V ⓐ 3A				25K645353-J①						
				6.3 VCT ⓐ 4.6A									

① Alternate Part #25K645353.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5200Ω CT	6-8Ω	25C645452H①	26S46	A-2902	AU-604	A-3337	26S46	S-53X	
T3	6700Ω CT	6-8Ω	25C645453D②	24S16	A-2905	AU-609③	A-3880	24S16	S-57Z③	
T4	5200Ω CT	6-8Ω	25C645452H①	26S46	A-2902	AU-604	A-3337	26S46	S-53X	

① Alternate Part #25C645452.
② Alternate Part #25C645453.
③ Drill New Mounting Hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	6"x 9"	PM	4-6Ω	50K645791 ♦		♦ Model SK29 Series
SP2	5"	PM	8-10Ω	50C638562	5A15TZ8.8	‡ Model SK28 Series, SK30 Series
SP3	15"	PM	6-8Ω	50C642735 ♦	15A10LZ6.9	* Model SK31 Series
SP4	6"x 9"	PM	4-6Ω	50K645791 ♦		
SP5	5"	PM	8-10Ω	50C638562	5A15TZ8.8	
	8"	PM	6-8Ω	50K645582 † ‡	8A31Z8	
	15"	PM	6-8Ω	50K642743 ‡	15A10L	
	15"	PM	6-8Ω	50C632259 *	15A10L	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA MOTOROLA PART No. FUSE	MOTOROLA PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3A 125V S/B P/T	65A646112		313003 (3A 125V) (S/B P/T)		MDV3	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA MOTOROLA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2	59K645704	13TB		66 ①				8TA4-S	N-8TA-S

① Use PT3 Mount.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA MOTOROLA PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M3	47K645702 †♦	W-103STDS †♦ or W-103STSS †	S-69XSD †♦ or S-69X †	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	Switch	40C642110	Function, Includes Off-On (5 Position)
M5	Switch	40B642153	Stereo-Monaural (Rotary Wafer Type)

PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36K644283	Loudness, All Except SK29 Series
Knob	36K644312	Loudness, SK29 Series
Knob	36K644284	Bass & Treble, All except SK29 Series
Knob	36K644311	Bass & Treble, Model SK29 Series
Knob	36K644285	Balance, All Except SK29 Series
Knob	36K644288	Balance, SK29 Series
Knob	36K644287	Function, All Except SK29 Series
Knob	36K644290	Function, Model SK29 Series
Knob	36K644282	Selector, All Except SK29 Series
Knob	36K644289	Selector, Model SK29 Series
Cabinet	16K644321	Model SK28B
Cabinet	16E644320	Model SK28M
Cabinet	16K644322	Model SK28W
Cabinet	16K645032	Model SK29B
Cabinet	16E645030	Model SK29M
Cabinet	16K645031	Model SK29W
Cabinet	16K644351	Model SK30B
Cabinet	16K644352	Model SK30MC
Cabinet	16E644350	Model SK30M
Cabinet	16K644353	Model SK30W
Cabinet	16K644181	Equipment & Center (Bass) Channel Speaker, Model SK31B
Cabinet	16E644183	Equipment & Center (Bass) Channel Speaker, Model SK31CW
Cabinet	16E644180	Equipment & Center (Bass) Channel Speaker, Model SK31M
Cabinet	16K644832	Left Channel Speaker, Model SK31CW
Cabinet	16K644827	Right & Left Channel Speaker, Model SK31B
Cabinet	16D644831	Right Channel Speaker, Model SK31CW
Cabinet	16D644826	Right & Left Channel Speaker, Model SK31M
Cabinet Leg	16K644328	Model SK28B
Cabinet Leg	16K644327	Model SK28M
Cabinet Leg	16K644329	Model SK28W
Cabinet Leg	16C644168	Model SK29B, M, W
Cabinet Leg	16K644362	Model SK30B
Cabinet Leg	16K644361	Model SK30M
Cabinet Leg	16K644363	Model SK30MC
Cabinet Leg	16K644364	Model SK30W
Cabinet Lid	16K642496	Model SK28B
Cabinet Lid	16K642495	Model SK28M
Cabinet Lid	16K645619	Model SK28W
Cabinet Lid	16K645037	Model SK29B
Cabinet Lid	16K645035	Model SK29M
Cabinet Lid	16K645036	Model SK29W
Cabinet Lid	16K644357	Model SK30B
Cabinet Lid	16K644356	Model SK30M
Cabinet Lid	16K644358	Model SK30MC
Cabinet Lid	16K644359	Model SK30W
Cabinet Lid	16K640053	Model SK31B
Cabinet Lid	16K642442	Model SK31CW
Cabinet Lid	16K640054	Model SK31M

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

PM17, PM18, TPM11, TPM12
(Ch. RC-1192, RS-177A, RS-179)

RCA VICTOR MODELS KS11, KS12,
PM17, PM18, TPM11, TPM12
(Ch. RC-1192, RS-177A, RS-179)

MODEL TPM11

MODEL KS11

RCA VICTOR MODELS KS11, KS12,
PM17, PM18, TPM11, TPM12
(Ch. RC-1192, RS-177A, RS-179)

TRADE NAME	RCA Victor Models PM17, PM18 (Preamp. Ch. RS-179, Amp. Ch. RS-177A) TPM11, TPM12 (Tuner Ch. RC-1192, Preamp. Ch. RS-179, Amp. Ch. RS-177A) KS11, KS12 (External Speaker Units)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.
TYPE SET	AC Operated 8 Tube FM-AM Tuner, 2 Tube Stereo Preamplifier, 7 Tube Stereo Amplifier and 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 173 Watts, 1.6 Amp. @117 Volts AC (FM-AM)
TUNING RANGES—BROADCAST	535-1620KC FREQ. MOD. 88-108MC

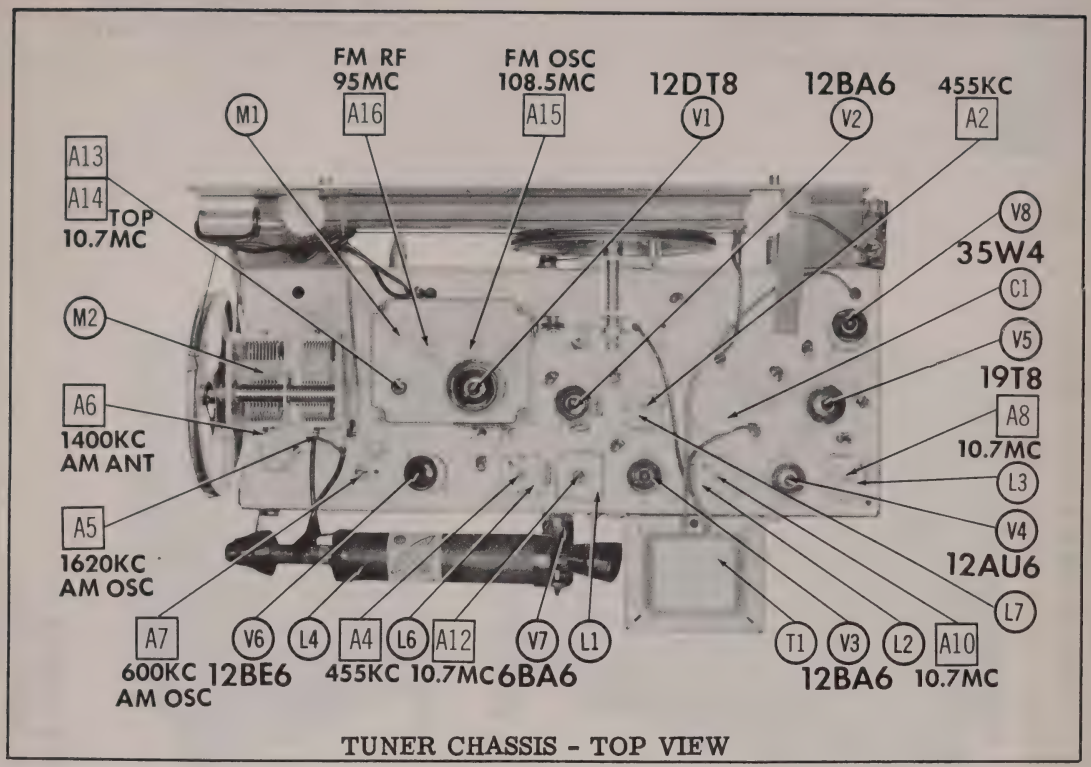
FOR SERVICE INFORMATION ON RECORD CHANGER — SEE RCA RP-211-1 — PHOTOFACT SET 475 FOLDER 7

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

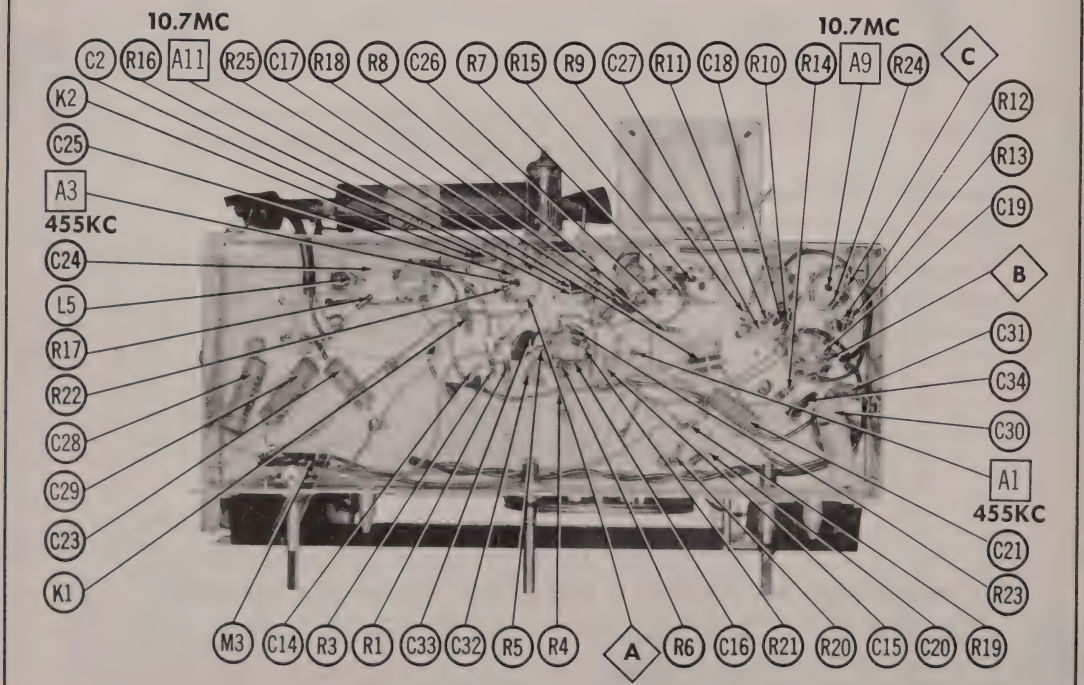
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JN766

SET 491 FOLDER 12



TUNER CHASSIS - TOP VIEW



TUNER CHASSIS - BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested alignment tools:
- A1 thru A4, A8 thru A10 . . GENERAL CEMENT #5097, 8727; WALSCO #2515
- A5, A6 . . . . . GENERAL CEMENT #5004, 5008, 5009; WALSCO #2520
- A7 . . . . . GENERAL CEMENT #8721, 8722; WALSCO #2519
- A11, A12 . . . . . GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989; WALSCO #2515, 2531, 2532
- A15, A16 . . . . . GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089; WALSCO #2512, 2525, 2528

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400% Mod.)	(AM) Tuning gang fully open.	DC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	Tune to 1400KC signal.	"	A6	Adjust for maximum deflection.
4.	"	600KC	Tune to 600KC Signal.	"	A7	Adjust for maximum deflection while rocking tuning gang.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .001mfd to pin 1 (grid) of FM Limiter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (B). Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	"	"	"	DC probe thru 1meg to point (C). Common to chassis.	A9	Adjust for maximum deflection.
7.	High side thru .001mfd to pin 1 (grid) of 2nd FM IF. Low side to chassis.	"	"	DC probe thru 270K to pin 1 (grid) of FM Limiter. Common to chassis.	A10	"
8.	High side thru .001mfd to pin 1 (grid) of 1st. FM IF. Low side to chassis.	"	"	"	A11, A12	"
9.	Across FM antenna terminals.	"	"	"	A13, A14	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .001mfd to pin 1 (grid) of FM Limiter. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point (B). Low side to chassis.	A8	Adjust to place marker at the center of crossover lines similar to Fig. 1.
6.	"	"	"	Vert. amp. thru 27K to point (C). Low side to chassis.	A9	Adjust for maximum gain and symmetry of response similar to Fig. 2.
7.	High side thru .001mfd to pin 1 (grid) of 2nd FM IF. Low side to chassis.	"	"	Vert. amp. thru 270K to pin 1 (grid) of FM Limiter. Low side to chassis.	A10	"
8.	High side thru .001mfd to pin 1 (grid) of 1st FM IF. Low side to chassis.	"	"	"	A11, A12	"
9.	Across FM Antenna terminals.	"	"	"	A13, A14	"

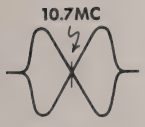


FIG. 1

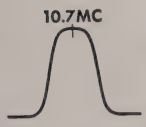


FIG. 2

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10.	Across FM antenna terminals thru 270Ω	87.5MC (Unmod.)	(FM) Low Freq. End Stop.	DC probe thru 270K to pin 1 (grid) of FM Limiter. Common to chassis.	FM Tuner String Drive Collar	Adjust for maximum deflection.
11.	"	108.5MC	High End Stop.	"	A15	"
12.	"	95MC	Tune to 95MC signal.	"	A16	"

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	12DT8	V5	Discriminator-AM Det. - Tuning Ind. Amp.	19T8
V2	1st FM IF Amp.	12BA6	V6	AM Converter	12BE6
V3	2nd FM IF Amp.	12BA6	V7	AM IF Amp.	6BA6
V4	FM Limiter	12AU6	V8	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■80	150	73520	AFH2-19	XB0181	FP216	TMD-17	TVL-2442.1	
B	▲50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	6 5%	Note 1			C10V6C			
C3	10 N750 ± 1mmf		N750-SI 10	TCN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C4	1000		SI 1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C5	1000		SI 1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C6	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C7	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C8	2-6					*		
C9	10 N470 ± 1mmf					*		
C10	15 NPO 10%		NPO-SI 15	TCZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C11	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C12	8.2 P100 ± 1mmf							
C13	68 N750 5%		N750-SI 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C15	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C16	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C17	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C18	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C19	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C20	680 10%			DD-681	1R5T68	CCD-681	GP368	10TS-T68
C21	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C22	2-10			829-10				
C23	.047 400V		P488N-047	DD-503	CUB4S47	4DP-473	GEM-4147	4TM-S47
C24	56 N750 10%		N750-SI 56	TCN-56	C10Q56U	CCTN-560	CNO-456	10TCU-Q56
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C26	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C28	.056 200V		P684CM-057			4DP-3-563	GEM-6156	2WF-S56
C29	.056 200V		P684CM-057			4DP-3-563	GEM-6156	2WF-S56
C30	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C31	.0047 600V		P688N-0047	D6-472	CUB6D47	6DP-3-473	GEM-6247	6TM-D47
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C33	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10

Note 1. Not used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA Victor PART No.	REPLACEMENT DATA
K1	FM Antenna Filter	470mmf, .3-1meg	104328	Centralab RC-471 Sprague AC1-1
K2	FM Antenna Filter	470mmf, .3-1meg	104328	Centralab RC-471 Sprague AC1-1

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	1000Ω	
R2	1meg	
R3	3300Ω	
R4	33K	
R5	220Ω	
R6	150Ω	
R7	100K	
R8	82Ω	
R9	470K	

ITEM No.	RATING	REMARKS
R10	10K	
R11	120Ω	
R12	100K	
R13	100K	
R14	100K	
R15	22meg	
R16	22meg	
R17	33K	
R18	220Ω	

ITEM No.	RATING	REMARKS
R19	100K	
R20	390K	
R21	100K	
R22	390K	
R23	2.2meg	
R24	10meg	
R25	1200Ω 2W	

COILS (RF-IF)

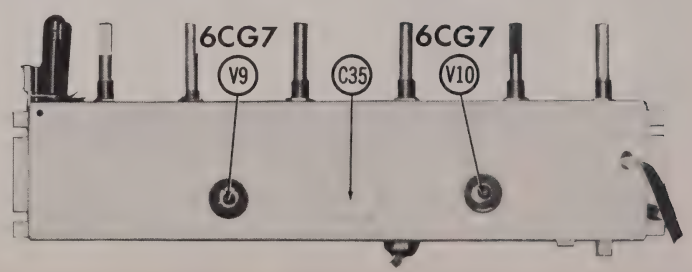
ITEM No.	USE	REPLACEMENT DATA						NOTES
		RCA Victor PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	2nd FM IF Trans.	77513	16-3472	16-3472		1461		
L2	3rd FM IF Trans.	77512						
L3	Discriminator	77511	17-3494	17-3494	FM-253	1464		
L4	Loopstick	108411	14-7002	14-7002	BC-418	705-A		
L5	AM Osc. Coil	79057			BC-393	71-OSC		
L6	1st AM IF Trans.	77416	16-6758	16-6758	BC-352	12-C1	RF-1	
L7	2nd AM IF Trans.	76328	16-6770	16-6770	BC-355	12-C2		

TRANSFORMER (POWER)

ITEM No.	RATING		REPLACEMENT DATA						
	PRI.	SEC. 1	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .34A	115V@.220A Tap@ 6.3V@.45A	104609						

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M1	FM Tuner	107004	Complete, Less Tube
M2	Tuning Cap.	108407	AM, 2 Gang (Ant. 10.7-301.5mmf, Osc. 12-129.8mmf)
M3	Switch	108408	Selector



PREAMP CHASSIS—TOP VIEW

PREAMP PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V9	Left Channel Preamp. - Right Channel Preamp.	6CG7	V10	Left Channel AF Amp. - Right Channel AF Amp.	6CG7

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C35A	■50	10	108497	AFH2-06	B0080	WP202.1	TMD-5	TVL-2320	
B	▲50	10							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C36	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C37	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C38	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C39	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C40	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C41	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C42	.047 200V		P288N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	2TM-S47
C43	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R26A	500K *	½	108485					Loudness, Right Channel
B	500K *	½						Loudness, Left Channel
C	Switch							Push-Pull Off-On
R27A	500K	½	108476	B-60				Bass, Right Channel
B	500K	½		SR-60				Bass, Left Channel
C	Bushing			AK-31				
R28A	500K	½	108475	B-59				Treble, Right Channel
B	500K	½		SR-59				Treble, Left Channel
C	Bushing			AK-31				
R29A	90Ω	2(WW)	108493					Balance Indicator Control
B	1meg	½						Balance

* Taps @ 84K & 168K.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R30	8200Ω	
R31	100K	
R32	2.7meg	
R33	100K	
R34	1500Ω	
R35	22K	
R36	330K	

ITEM No.	RATING	REMARKS
R37	8200Ω	
R38	47K	
R39	100K	
R40	1500Ω	
R41	1meg	
R42	8200Ω	
R43	2.7meg	

ITEM No.	RATING	REMARKS
R44	100K	
R45	330K	
R46	22K	
R47	8200Ω	
R48	100K	
R49	47K	
R50	100K	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA Victor PART No.	REPLACEMENT DATA
K3	Tone Comp.	470mmf, 1000mmf, 4700mmf, 10000mmf, 22K, 220K	106457	Sprague TC-13
K4	Tone Comp.	470mmf, 1000mmf, 4700mmf, 10000mmf, 22K, 220K	106457	Sprague TC-13

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							
	RCA Victor PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M4	106960A	13TBX		26S	S3-3 D1-1			8TA4-SD	N-8TA-SD

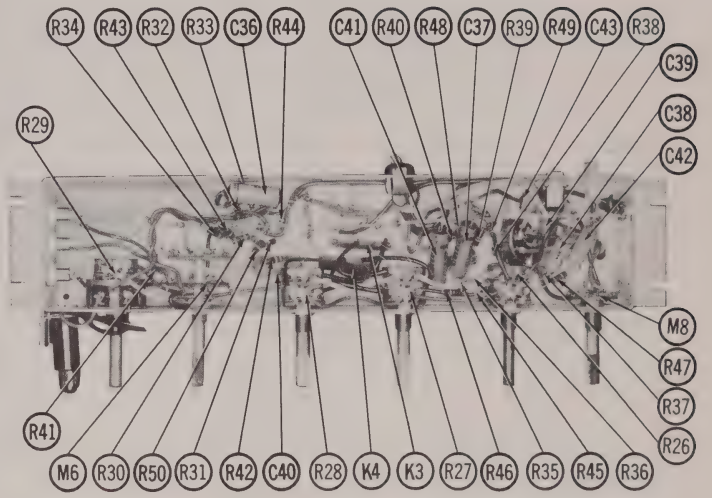
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

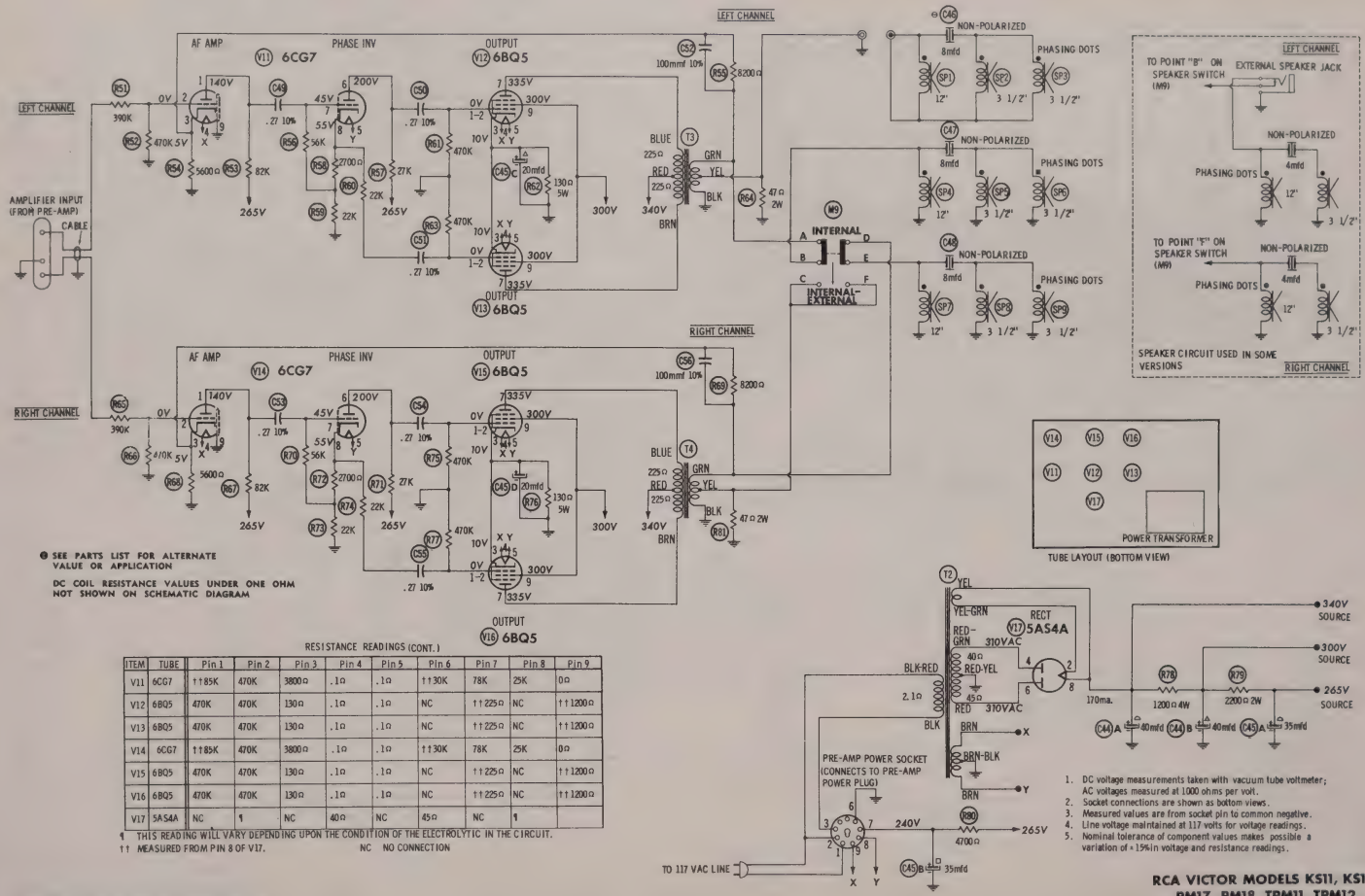
ITEM No.	REPLACEMENT DATA			REMARKS	
	RCA Victor PART No.	CLEVITE WALCO PART No.	JENSEN PART No.		
M5	108215	W-103STDS †♦ or W-103STSS †	M-77X † or M-77XSD †♦ or M-77XDD ♦	† Jewel	♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M6	Switch	108473	Function Selector
M7	Switch	108457	Off-On (Part of Changer)
M8	Switch	108494	Speaker Reversing



PREAMP CHASSIS—BOTTOM VIEW



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS (CONT.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V11	6CG7	††85K	470K	3800Ω	.1Ω	.1Ω	††30K	78K	25K	0Ω
V12	6BQ5	470K	470K	130Ω	.1Ω	.1Ω	NC	††225Ω	NC	††1200Ω
V13	6BQ5	470K	470K	130Ω	.1Ω	.1Ω	NC	††225Ω	NC	††1200Ω
V14	6CG7	††85K	470K	3800Ω	.1Ω	.1Ω	††30K	78K	25K	0Ω
V15	6BQ5	470K	470K	130Ω	.1Ω	.1Ω	NC	††225Ω	NC	††1200Ω
V16	6BQ5	470K	470K	130Ω	.1Ω	.1Ω	NC	††225Ω	NC	††1200Ω
V17	5AS4A	NC	¶	NC	40Ω	NC	45Ω	NC	¶	

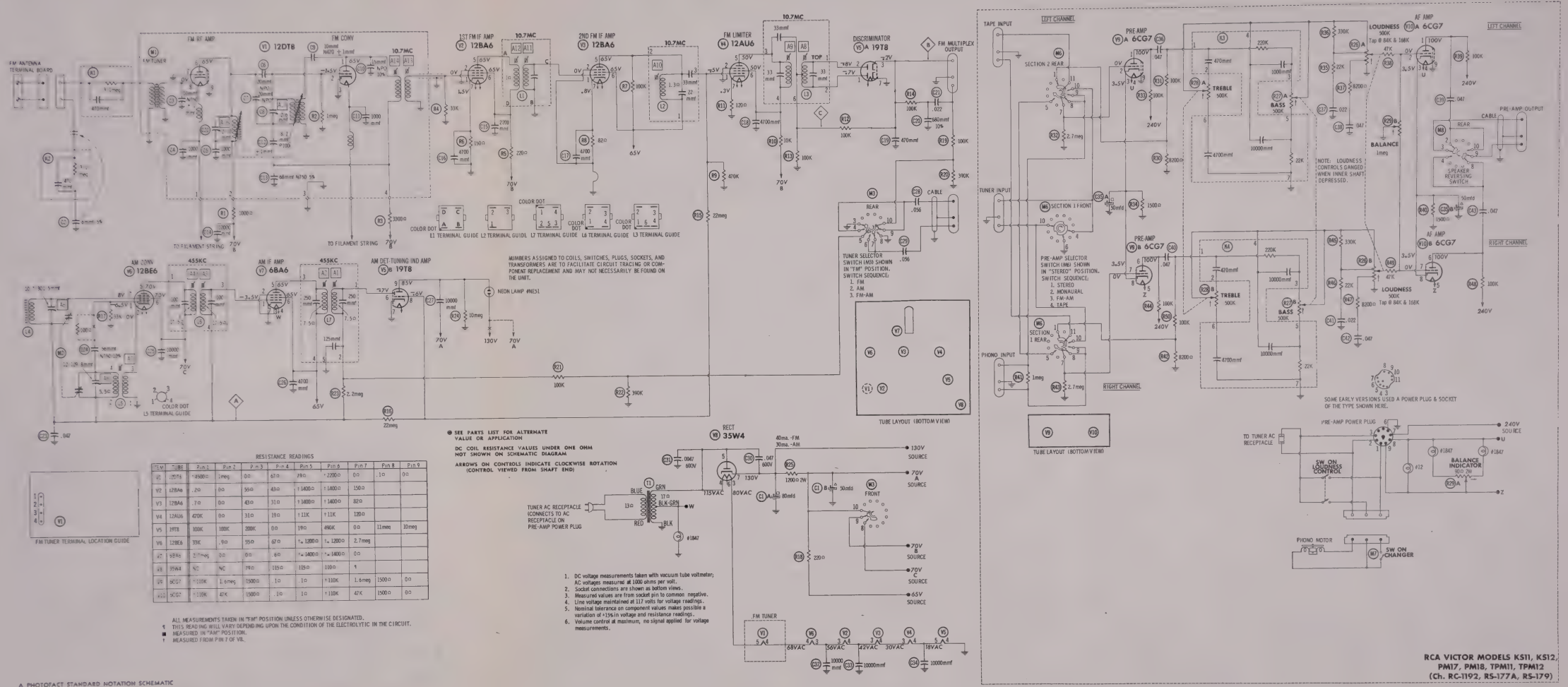
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
†† MEASURED FROM PIN 8 OF V17. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1960

RCA VICTOR MODELS KS11, KS12, PM17, PM18, TPM11, TPM12 (Ch. RC-1192, RS-177A, RS-179)


FM RF AMP
FM CONV
1ST FM IF AMP 12BA6
2ND FM IF AMP 12BA6
FM LIMITER 12AU6
DISCRIMINATOR 19T8
FM MULTIPLEX OUTPUT
10.7MC
FM ANTENNA TERMINAL BOARD
FM TUNER
TO FILAMENT STRING
COLOR DOT
L1 TERMINAL GUIDE L2 TERMINAL GUIDE L7 TERMINAL GUIDE L6 TERMINAL GUIDE L3 TERMINAL GUIDE
AM CONV 12BE6
AM IF AMP 6BA6
455KC
AM DET-TUNING IND AMP 19T8
NEON LAMP #NE51
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
TUNER SELECTOR SWITCH (M3) SHOWN IN "FM" POSITION. SWITCH SEQUENCE: 1. FM 2. AM 3. FM-AM
TUBE LAYOUT (BOTTOM VIEW)
FM TUNER TERMINAL LOCATION GUIDE
RECT 35W4
TUNER AC RECEPTACLE (CONNECTS TO AC RECEPTACLE ON PRE-AMP POWER PLUG
130V SOURCE
70V A SOURCE
70V B SOURCE
70V C SOURCE
65V SOURCE
TAPE INPUT
TUNER INPUT
PHONO INPUT
LEFT CHANNEL
RIGHT CHANNEL
PRE-AMP 6CG7
PRE-AMP SELECTOR SWITCH (M6) SHOWN IN "STEREO" POSITION. SWITCH SEQUENCE: 1. STEREO 2. MONAURAL 3. FM-AM 4. TAPE
AF AMP 6CG7
TREBLE 500K
BASS 500K
LOUDNESS 500K Tap @ 84K & 168K
BALANCE 1meg
NOTE: LOUDNESS CONTROLS GANGED WHEN INNER SHAFT DEPRESSED.
PRE-AMP OUTPUT CABLE
SPEAKER REVERSING SWITCH
SOME EARLY VERSIONS USED A POWER PLUG & SOCKET OF THE TYPE SHOWN HERE.
PRE-AMP POWER PLUG
TO TUNER AC RECEPTACLE
240V SOURCE
SW ON LOUDNESS CONTROL
BALANCE INDICATOR 100-0-100
PHONO MOTOR
SW ON CHANGER

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DT8	1450Ω	1meg	0Ω	67Ω	78Ω	2200Ω	0Ω	.1Ω	0Ω
V2	12BA6	.2Ω	0Ω	55Ω	43Ω	1400Ω	1400Ω	150Ω		
V3	12BA6	.7Ω	0Ω	43Ω	31Ω	1400Ω	1400Ω	82Ω		
V4	12AU6	470K	0Ω	31Ω	19Ω	11K	11K	120Ω		
V5	19T8	100K	100K	200K	0Ω	19Ω	490K	0Ω	11meg	10meg
V6	12BE6	33K	.9Ω	55Ω	67Ω	1200Ω	1200Ω	2.7meg		
V7	6BA6	2.7meg	0Ω	0Ω	6Ω	1400Ω	1400Ω	0Ω		
V8	35W4	NC	NC	7Ω	115Ω	115Ω	110Ω	¶		
V9	6CG7	110K	1.6meg	1500Ω	1Ω	1Ω	110K	1.6meg	1500Ω	0Ω
V10	6CG7	110K	47K	1500Ω	1Ω	1Ω	110K	47K	1500Ω	0Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
■ MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 7 OF V8.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

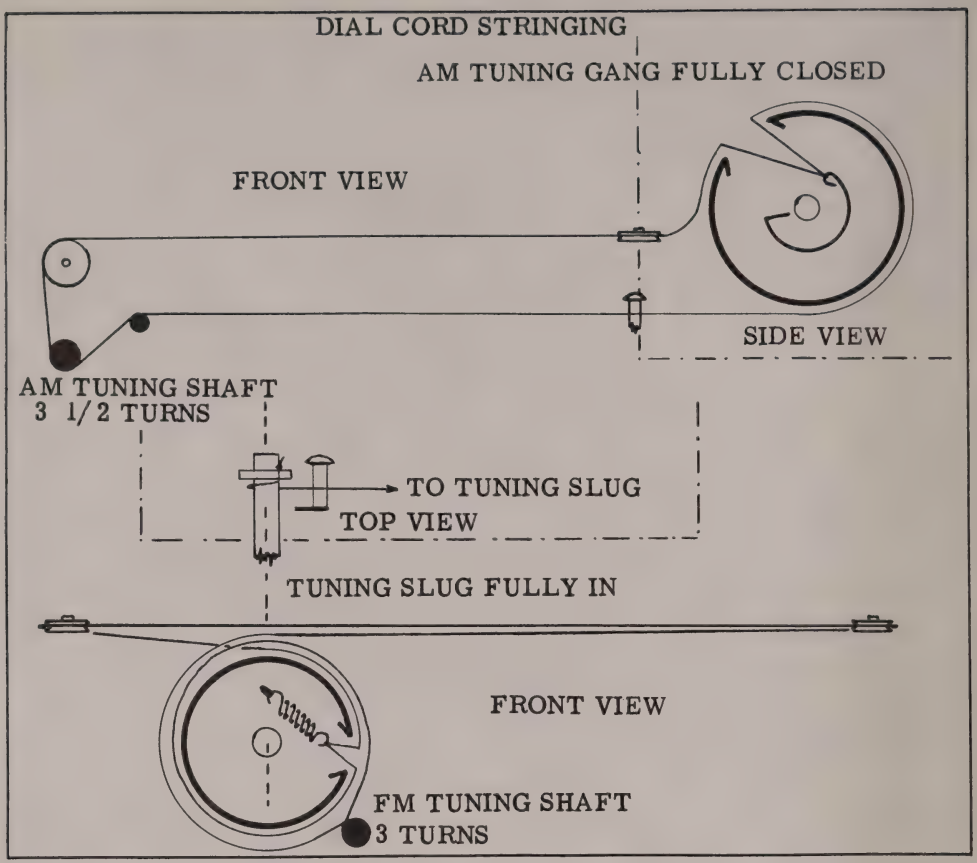
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

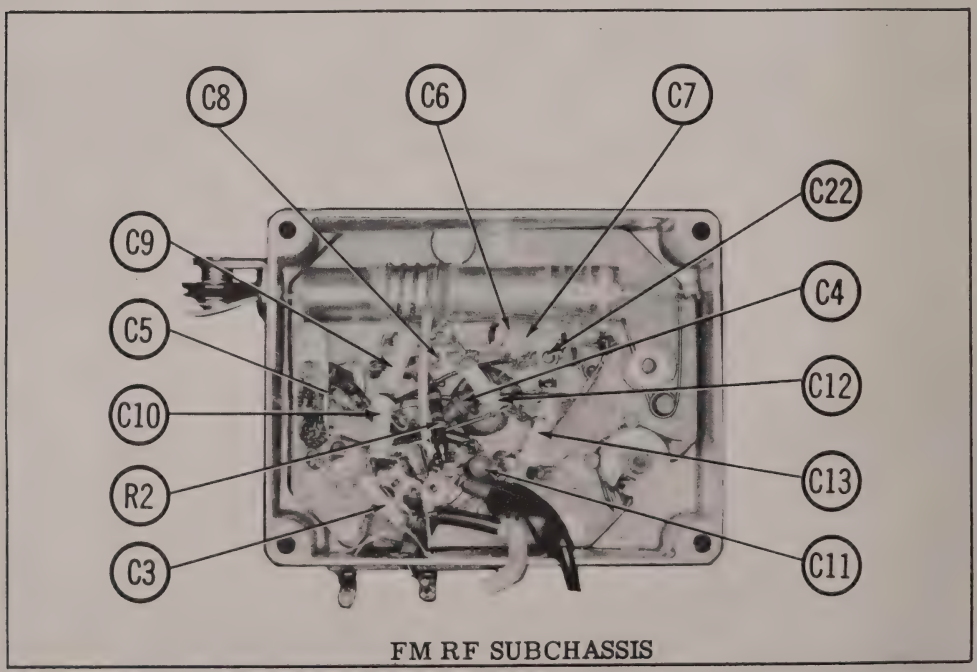
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1960

RCA VICTOR MODELS KS11, KS12, PM17, PM18, TPM11, TPM12 (Ch. RC-1192, RS-177A, RS-179)





FM RF SUBCHASSIS

AMP PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆			◆ RAYTHEON ◆ SYLVANIA ◆		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V11	Left Channel AF Amp. - Phase Inverter	6CG7	V14	Right Channel AF Amp. - Phase Inverter	6CG7
V12	Left Channel Output	6BQ5	V15	Right Channel Output	6BQ5
V13	Left Channel Output	6BQ5	V16	Right Channel Output	6BQ5
			V17	Rectifier	5AS4-A

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C44A	▲40	450	102913	AFH2-57	B0450	FP238	TMD-54	TVL-2764	
B	▲40	450							
C45A	▲35	400	108423	AFH4-79	D0663	FP431.2	TMQ-87	TVL-4737	
B	■35	400							
C	▲20	25							
D	20	25							
C46	8	10NP	100509	PRS-AC6200	BBR16-90 †	TCN108		TVANS-1112 *	Note 1
C47	8	10NP	100509	PRS-AC6200	BBR16-90 †	TCN108		TVANS-1112 *	
C48	8	10NP	100509	PRS-AC6200	BBR16-90 †	TCN108		TVANS-1112 *	

① Some versions may use 4mfd@10VNP (Part #106356).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C49	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274	GEM-6027	MS-427
C50	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274	GEM-6027	MS-427
C51	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274	GEM-6027	MS-427
C52	100 10%		NPO-SI 100	TCZ-100	C10T1C	CCD-101	GP310	10TS-T10
C53	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274	GEM-6027	MS-427
C54	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274	GEM-6027	MS-427
C55	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274	GEM-6027	MS-427
C56	100 10%		NPO-SI 100	TCZ-100	C10T1C	CCD-101	GP310	10TS-T10

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R51	390K	
R52	470K	
R53	82K	
R54	5600Ω	
R55	8200Ω	
R56	56K	
R57	27K	
R58	2700Ω	
R59	22K	
R60	22K	
R61	470K	

ITEM No.	RATING	REMARKS
R62	130Ω 5W	
R63	470K	
R64	47Ω 2W	
R65	390K	
R66	470K	
R67	82K	
R68	5600Ω	
R69	8200Ω	
R70	56K	
R71	27K	
R72	2700Ω	

ITEM No.	RATING	REMARKS
R73	22K	
R74	22K	
R75	470K	
R76	130Ω 5W	
R77	470K	
R78	12000Ω 4W	
R79	2200Ω 2W	
R80	4700Ω	
R81	47Ω 2W	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	117V@ 1.3A	620 VCT @ .170A	5V@ 3A	108420	24R23①			P-5059①	24R23①	
	SEC. 3	SEC. 4	SEC. 5							
	6.3V@ 5.7A									

① Drill New Mounting Holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	6600Ω CT	8Ω Tap @4Ω	108421		A-3028					
T4	6600Ω CT	8Ω Tap @4Ω	108421		A-3028					

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA RCA Victor PART No.	QUAM PART No.	NOTES
SP1	12"	PM	8-10Ω	100897	12A10PA	* External Speakers (Models KCS-11 or KCS-12)
SP2	3½"	PM	8-10Ω	105395	3A15TZ6.4	
SP3	3½"	PM	8-10Ω	105395	3A15TZ6.4	
SP4	12"	PM	8-10Ω	100897	12A10PA	
SP5	3½"	PM	8-10Ω	105395	3A15TZ6.4	
SP6	3½"	PM	8-10Ω	105395	3A15TZ6.4	
SP7	12"	PM	3-4Ω	106702 *	12A1	
SP8	3½"	PM	8-10Ω	105395 *	3A15TZ6.4	
SP9	3½"	PM	8-10Ω	105395 *	3A15TZ6.4	

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M9	Switch	46760	Speaker (DPDT Slide Type)

CABINETS & CABINET PARTS

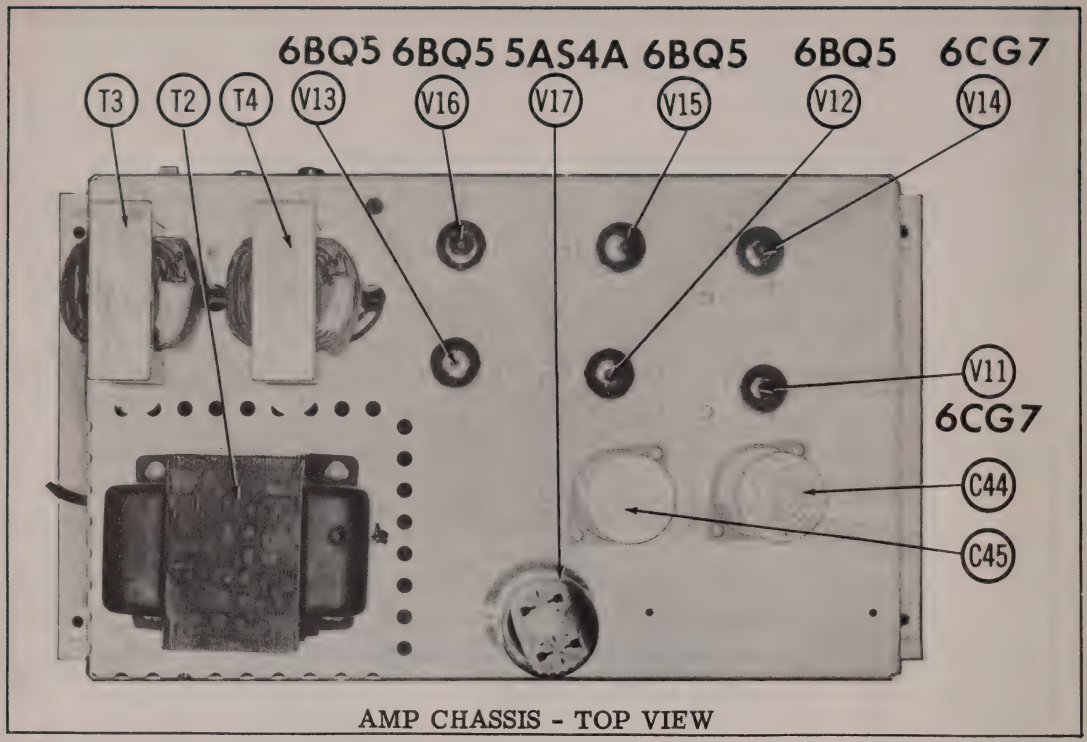
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	108505	Tuning FM & AM
Knob	108506	Loudness, Bass, Treble, Function
Knob	108559	Stereo Balance
Dial Pointer	108413	FM
Dial Pointer	108414	AM

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

RCA VICTOR MODELS KS11, KS12,
PM17, PM18, TPM11, TPM12
(Ch. RC-1192, RS-177A, RS-179)



AMP CHASSIS - TOP VIEW

AMP CHASSIS - BOTTOM VIEW

PHOTOFACT® Folder

RECORDIO MODELS
591, 602

MODEL 591

MODEL 602

RECORDIO MODELS
591, 602

GENERAL INFORMATION

Models 591 and 602 Recordio tape recorders feature push button operation, dual track, dual speed recording and playback. Dual track recording gives two full-length recordings on one reel of tape. Any size reel up to seven inches can be used. On Model 602, a tape timer enables the operator to locate immediately any selection on a recorded tape. Two neon record-level indicators simplify the recording level setting.

New recordings can be made on a previously recorded tape because the erase head is automatically positioned when the Record button is depressed, or the same recording may be played back indefinitely. Recordings can be made from an external radio, television receiver, or phonograph, in addition to those made directly from the microphone. Recordings can be played back through the self-contained speaker or an external speaker or speakers by using the output jack.

Models 591 and 602 have two tape speeds, 7 1/2 and 3 3/4 inches per second. When both tracks of the tape are used, the recording times are as follows:

Reel Size	3 3/4 Ips	7 1/2 Ips
5" (600 ft.)	1 Hour	1/2 Hour
7" (1200 ft.)	2 Hours	1 Hour

These Recordios operate on 60 cycles, 117 volts AC only. Before connecting to a line supply, be absolutely certain it agrees with the foregoing specifications. The unit will be severely damaged if connected to a direct current (DC) line.

Manufactured by:

Recordio Corporation
Charlotte, Michigan

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

CQ415

SET491 FOLDER 13

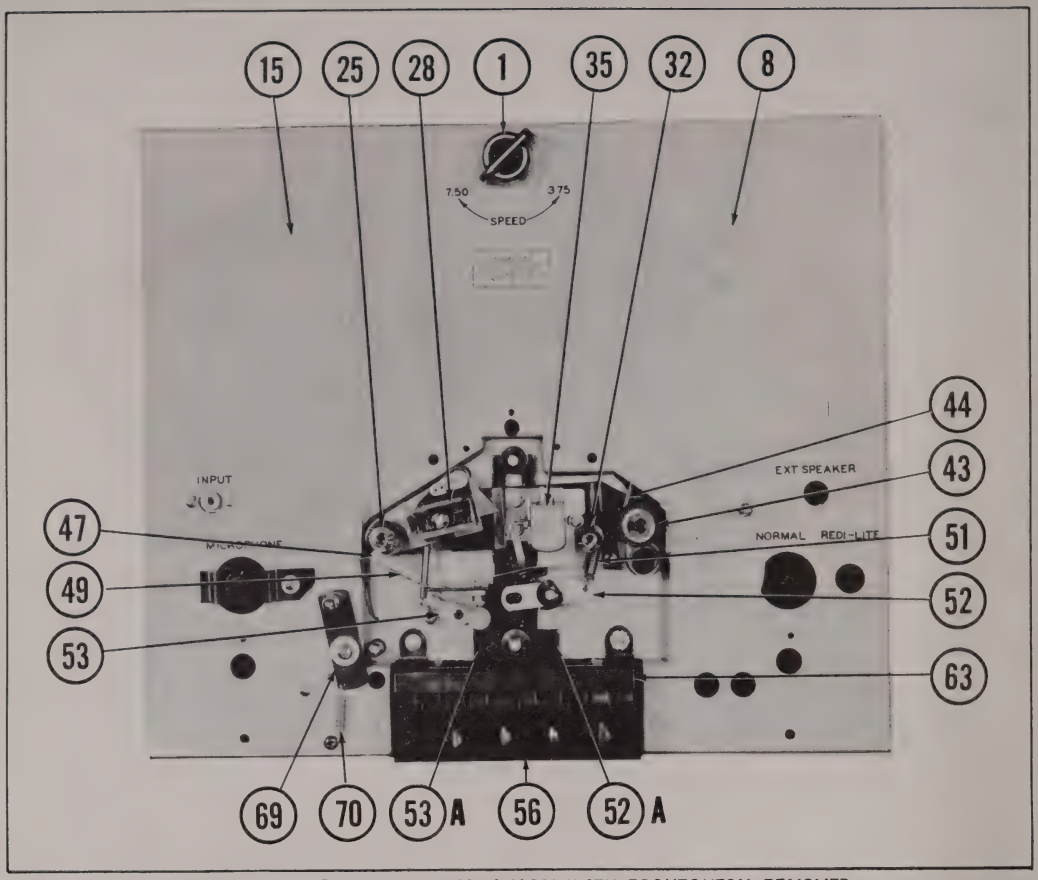


FIG. 1 TOP VIEW OF MECHANISM WITH ESCUTCHEON REMOVED

OPERATING INSTRUCTIONS

Preparing For Operation

1. Remove the AC cord, reel of tape, empty reel, and the microphone from the case storage compartment.
2. Depress the Stop button.
3. Insert the AC cord into a convenient wall receptacle of the proper rating.
4. Set the Speed Change knob to 3.75 or 7.50, as desired.

CAUTION: Do not turn Speed Change knob unless Stop button is depressed.

When the Forward or Rewind buttons are depressed, the Record and Play buttons are locked so that they cannot be pressed down, with the possibility of spilling the tape. The buttons should always be pressed down firmly until they latch. Always depress the Stop button before changing functions or speeds.

IMPORTANT: Always depress the Stop button when the recorder is not in use.

Threading The Tape

1. Place a reel of tape on the left reel pan (15), making certain the reel slots engage the protrusions on the pan. Place an empty reel on the right reel pan (8), again making certain the reel slots engage the protrusions on the pan.
2. Unwind about 14 inches of tape from the supply reel. Hold a section taut and insert it into the tape slot, making certain the dull-coated side faces the heads (rear of unit).
3. Insert the free end of the tape into one of the three slots in the hub of the take-up reel. While holding the end in place, turn the reel two or three turns to secure the tape to the reel.

To Record From a Microphone

1. Turn the On-Off-Volume control to the right and allow about 30 seconds for the tubes to warm up.
2. Move the Record Lock lever downward with the left hand. This releases the Record Safety lock, which prevents accidental erasure.
3. Depress the Record button with the right hand (while holding the Record Lock lever with the left hand) until it latches.
4. Adjust the Volume control until the normal level indicator just flashes while speaking into the microphone. The overload indicator may flash occasionally on peak passages. It should not flash continually, which indicates distortion.
5. The Tone control is automatically disconnected when the unit is recording. When recording from a radio, set the radio tone control for maximum treble.

NOTE: To monitor the recording, place the Monitor switch in the On position.

To Record From an External Radio, TV Receiver or Phonograph

1. Insert the phonograph plug into the input jack.
2. For radio or TV recording, connect the patch cord (Part No. C20.233) to the voice-coil terminals of the radio or TV receiver speaker by means of alligator clips. Plug into the input jack.
3. Proceed with recording as described under "To Record From Microphone".

NOTE: Remove patch cord after recording.

To Use Second Track

1. Depress the Stop button after all tape has been wound onto the take-up reel.
2. Remove reel containing tape, and place on left (supply) reel.
3. Place empty reel on right (take-up) pan.
4. Thread the tape and proceed with the recording as previously described.

To Erase Tape

When the Record button is depressed, the erase head is automatically positioned, erasing any previous recording while a new one is being made. Material no longer needed can be erased, without recording, by depressing the Record button and turning the Volume Control knob to its minimum position. One track is erased at a time. To erase the second track, reverse the reels and repeat the foregoing operation.

To Play Recordings

1. Thread tape as described under "Threading The Tape".
2. Set the Speed Change knob to the speed at which the recording was made.
3. Depress the Play button until it latches.
4. Adjust the Volume and Tone controls to the desired listening level.

NOTE: The Speaker Monitor switch must be in the On position.

High-Speed Forward or Rewind

To play a certain portion of the tape over again, it is not necessary to rewind the entire reel. Depressing the Forward or Rewind buttons will rapidly advance or rewind the tape.

Several minutes of normal recording can be skipped in a few seconds by using the Forward and Rewind buttons.

Tape Timer

If you wish to play back a certain portion of a recording while making a recording or playing back a tape on the Model 601, note the reading on the Timer Scale at the time the particular reading is being made or heard. Rewind the tape until the same number appears on the scale. Depress the Stop button, and then the Play button.

When starting a new reel or rerecording a reel, reset the indicator pointer to "0" by rotating the Reset knob. By starting at "0" on all tapes, you can catalog the number location for each selection on any reel.

To Use Extension Speaker or Speakers

For better tone quality and power than the internal speakers can provide, it is suggested that large external speakers be plugged into the External Speaker jacks.

The Recordio Model DS-599 dual-extension speaker set enables you to use two speakers, giving more power and sound. Each speaker has a speaker jack, so that one speaker can be plugged into the other. Thus, both speakers are in operation for better sound on straight playback or when the recorder is used for public address systems. However, the recorder is suitable for use with any extension speakers of the permanent-magnet type, provided they are matched and have a 3 - 8-ohm voice coil.

To Use As a Public Address System

To use the recorder as a public address system, plug an extension speaker or speakers into the external phone input jack and depress the record button. Adjust the tone and volume controls to desired level. A recording can be made at the same time by threading a reel of tape onto the recordio.

CAUTION: When using the recorder as a public address system, make sure the microphone is as far away as possible from the speaker or speakers to prevent feed-back squeal.

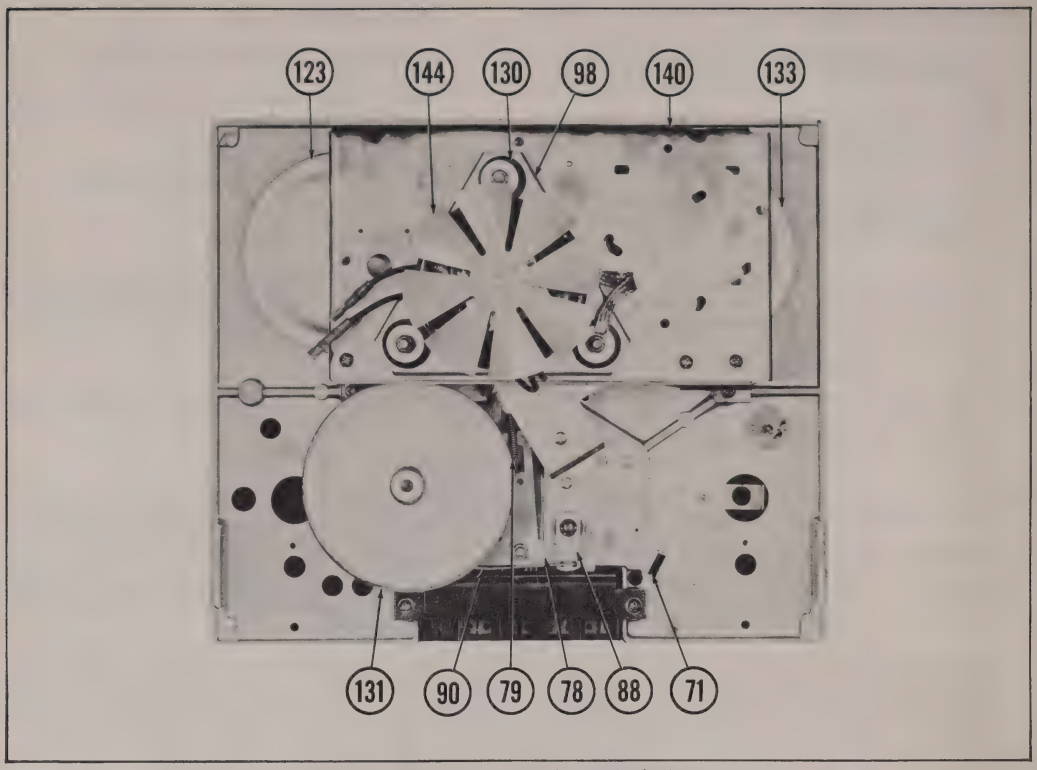


FIG.2 BOTTOM VIEW OF MECHANISM

DISASSEMBLY INSTRUCTIONS

To Remove Unit From Case

1. Remove Volume and Tone control knobs.
2. Remove two Phillips head screws from front escutcheon.
3. Remove two hex-head screws from front base plate.
4. Remove two Phillips head screws from the rear compartment.
5. Remove Phillips head screw holding AC cord to cabinet.
6. Lift unit out of case, removing speaker leads from speaker before removing unit completely.
7. To reassemble, reverse the foregoing procedure.

To Remove Amplifier from Transport Mechanism

1. Disconnect the motor and power-transformer leads from the amplifier chassis.
2. Remove the head leads.
3. Remove two slotted-head machine screws from each end of the amplifier chassis.
4. Carefully lift the amplifier away from the transport mechanism, and disconnect the play-record switch actuating link.
5. To reassemble, reverse the foregoing procedure.

ADJUSTMENTS

Pressure Pad Adjustment (Refer to Exploded View)

1. Remove front escutcheon (14).
2. Depress the Play button. Do not turn the recorder on.

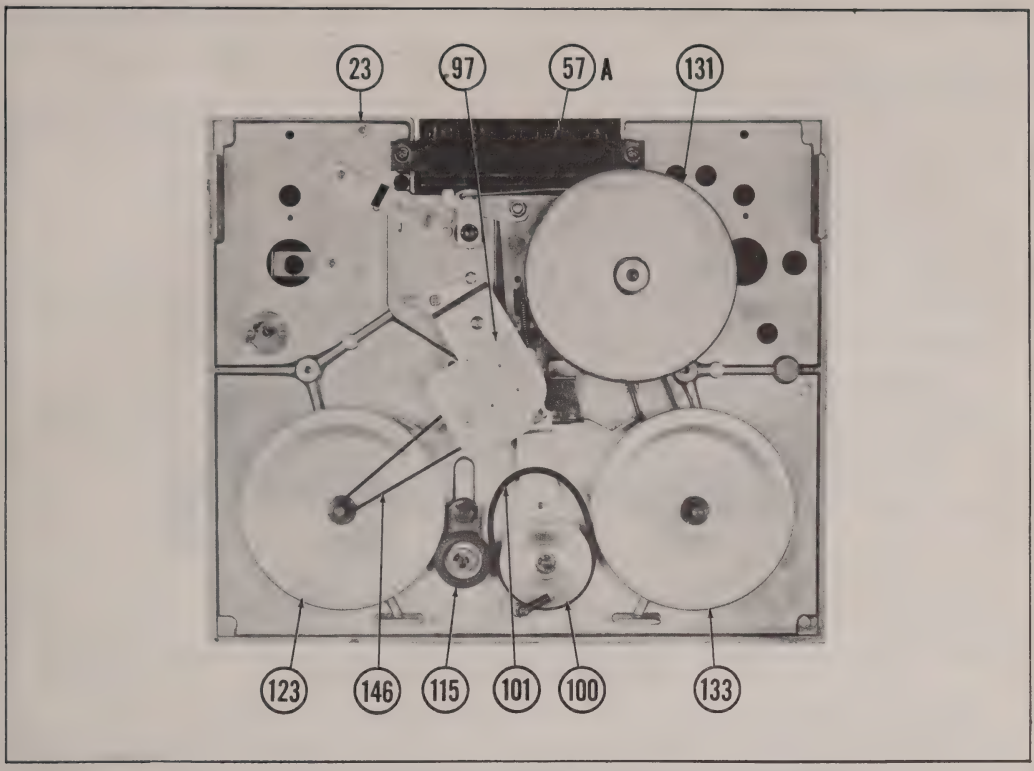


FIG.3 BOTTOM VIEW OF MECHANISM WITH DRIVE PLATE REMOVED

3. Using a pencil-type postal scale, check the pressure needed to just pull the right pad away from the play-record head. The test should be made at the end of the pressure pad mounting spring. If necessary, adjust locked adjustment screw (50) until a reading of 1 3/4 ounce $\pm$ 1/4 ounce is obtained.

4. Adjust guide post pressure pad (left pad) by bending pressure pad spring (49). It must be adjusted for minimum pressure against the tape.

NOTE: After making the adjustment, depress the Stop button, and replace the front escutcheon.

Erase Head

1. With tape properly threaded, turn recorder on and depress the Record button. Allow tape to run for a few seconds; then turn recorder off, but leave Record button depressed.

2. With timer escutcheon (7) and front escutcheon (14) removed, check erase head (28) to see that it is parallel with the tape.

3. Make sure the top edge of the tape coincides with the top end of the diagonal slot in the erasure head (junction of long diagonal and short vertical slot). To adjust the level of the tape, loosen set screw (24), and rotate tape guide post (25) to move the tape up or down.

Brake Shoe

1. With all push buttons in the up position, brake pads (81) should clear brake drums (123) and (133) by approximately 1/8 inch.

2. Depress the Stop button while observing the brake pads. Both brake pads must contact the brake drums at the same time and with equal pressure.

3. If necessary, adjust the pressure by bending brake spring (80).

Head Alignment

Use standard 6- or 12- alignment tape for this procedure.

Remove front and rear escutcheons. Clean pole pieces of play-record head, using a good commercial head cleaning agent, naptha or lighter fluid. Proceed as follows:

1. Thread alignment tape on recorder and turn the volume on full. Connect VTVM to external speaker jack. Set meter for AC volts, 3-volt range.

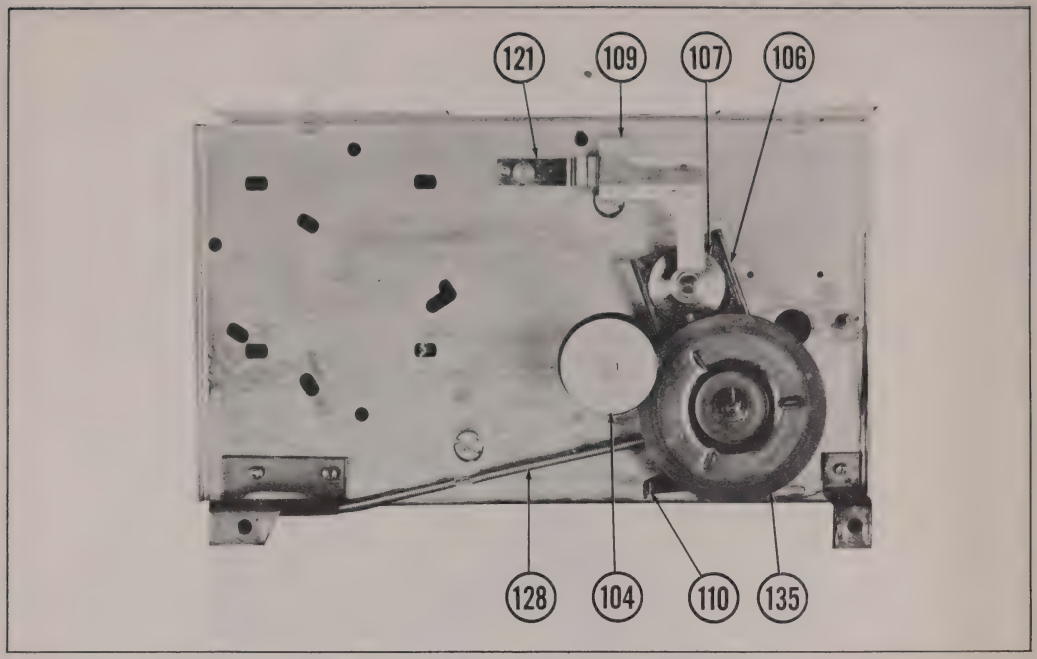


FIG.4 TOP VIEW OF DRIVE PLATE ASSEMBLY

2. Place unit in Play position, 7 1/ 2 ips. Decrease the volume until output is 1 volt on meter. Rotate play-record head adjustment screw (33) until maximum point of deflection is found.

3. Gently press the pressure pad at a point to the extreme right of the play-record head. The output should not increase. If it does, slightly readjust the pressure pads. (See "Pressure Pad Adjustment").

Bias Adjustment

1. Set line voltage at 117 volts AC.

2. Place unit in Record position and set volume to maximum.

3. Connect a VTVM thru low capacity probe across Record head. Place meter selector on AC volts, 100-volt range.

4. Adjust C18 for a reading of 85 volts. (Oscillator frequency is approximately 60KC.)

CLEANING

Most defects, other than wear or breakage, can be traced to dirty surfaces. Play-Record head (35), the capstan, and pinch roller (43) may accumulate tape coating oxide, which is worn off the tape as it passes these parts. This accumulation should be periodically removed because it will cause faint recording and poor playback. Wipe these surfaces carefully with a clean cloth. If dirt is caked or hard and will not come off with a dry cloth, dampen the cloth slightly with alcohol.

LUBRICATION

All rotating parts have generous size Oilite bearings, which are factory lubricated. Under normal use, no further lubrication is necessary. In heavy duty service, the following parts should be lubricated once a year with a drop of No. 20 motor oil.

1. The top and bottom motor bearings.

2. The capstan bearing.

3. Pinch roller (43) bearing.

4. All idler and drive wheel bearings.

5. The reel-spindle bearings.

The basic rule is — do not overlubricate. Oil must be kept off all rubber idlers and belts, the flywheel rim, and off any parts that might transfer oil to them. Always wipe excess lubrication from lubricated parts.

Occasionally remove foreign matter from under the plastic push-button cover and place a drop of oil on the sliding lever members.

TROUBLE CHART

Symptom	Cause	Remedy
Motor and amplifier dead.	1. Power supply defective.	1. Check voltages per schematic.
	2. Damaged power cord.	2. Repair or replace power cord.
	3. Defective On-Off switch.	3. Replace On-Off switch.
Does not record.	1. Faulty microphone or cord.	1. Replace if necessary after checking recorder with another type of input.
	2. Faulty input jack.	2. Check input jack and replace if necessary.
	3. Faulty tube.	3. Check tubes.
	4. Open play-record head (35).	4. Replace play-record head (35).
No erase, or erase is incomplete.	1. Erase head tension spring (46) disconnected or broken.	1. Connect or replace spring (46).
	2. Erase head (28) not adjusted properly.	2. See "Erase Head Adjustment" under "ADJUSTMENTS".
Flutter	1. Dirty play-record head (35), pressure pads, capstan shaft, or pinch roller (43).	1. Clean as described under "CLEANING".
Wow.	1. Brake return spring (74) disconnected or broken.	1. Connect or replace spring (74).
	2. Oil or foreign matter on drive surfaces.	2. Clean with a cloth and alcohol.
Tape spills when Stop button is depressed during fast forward or rewind.	1. Brake shoe out of adjustment.	1. See "Brake Shoe Adjustment" under "ADJUSTMENTS".
	2. Brake pads worn out or missing.	2. Replace brake pads.
No fast forward or rewind.	1. Idler lever tension spring (79) disconnected or broken, thereby not actuating idler lever (85).	1. Connect or replace spring (79).
	2. Idler drive belt (101) broken or not properly connected.	2. Replace idler drive belt (101).
Tape fails to wind onto take-up reel during Play or Record.	1. Reel drive spring (44) loose, disconnected, or broken.	1. Connect or replace reel drive spring (44).
	2. Reel pan shaft (8) binding.	2. Remove foreign matter from bearing surfaces and shaft with clean cloth. Lubricate with one drop of No. 10 motor oil.
No drive in Play or Record.	1. Idler tension spring (128) disconnected or broken.	1. Connect or replace idler tension spring (128).

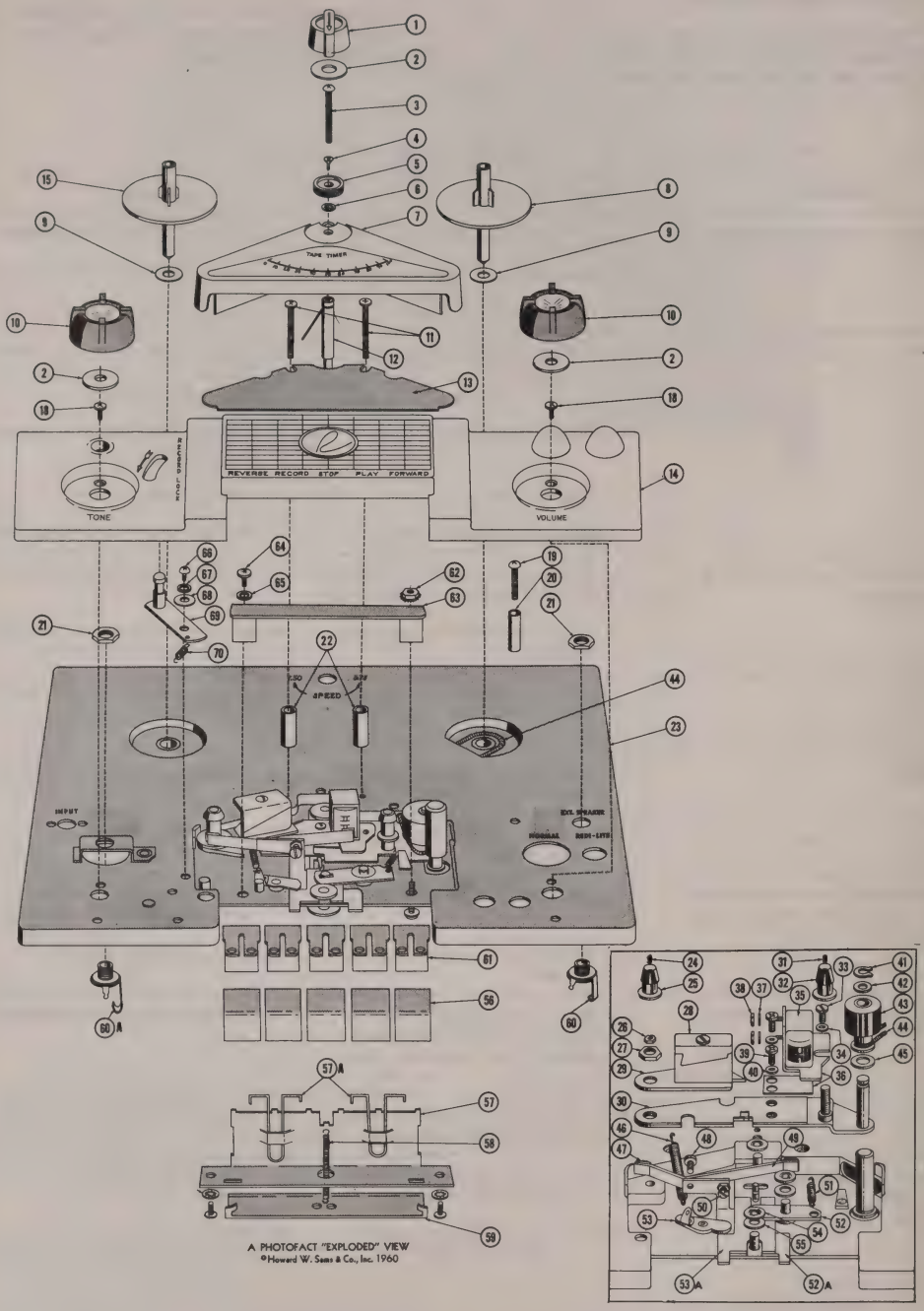


FIG. 5A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

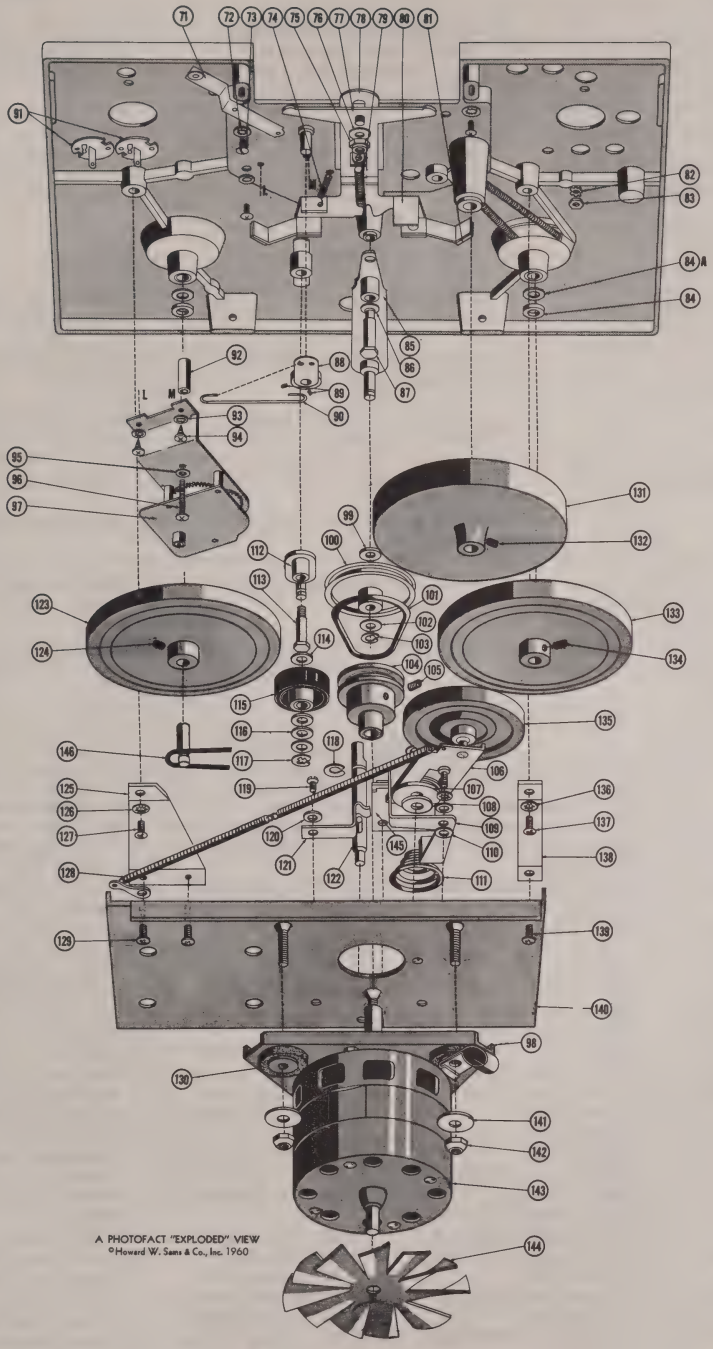


FIG.5B EXPLODED VIEW OF PARTS BELOW BASEPLATE

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
	2. Idler slide plate (106) binding on idler slide bushing (107), thus preventing idler wheel (135) from moving forward.	2. Check idler slide plate (106) and bushing (107) for burrs. Clean with alcohol.
Push buttons fail to latch into position.	1. Locking plate spring (58) disconnected or broken.	1. Connect or replace locking plate spring (58).
Poor high-frequency response:	1. Head not making proper contact with tape.	1. Clean the head.
	2. Improper head alignment.	2. Align head.
	3. Faulty amplifier.	3. Use standard audio trouble shooting procedures.
Hum	1. Microphone near equipment producing hum.	1. Move microphone away from equipment.
	2. Microphone leads insufficiently shielded.	2. Make sure leads are properly shielded.
Tape scrapes against edge of reel.	1. Reel warped.	1. Replace reel.
	2. Tape guides out of adjustment.	2. Realign tape guides.
Distorted recording; low volume due to no recording bias.	1. Faulty bias oscillator tube or oscillator coil.	1. Check oscillator tube and oscillator coil.
	2. Faulty play-record head.	2. Replace head.

MECHANICAL PARTS LIST

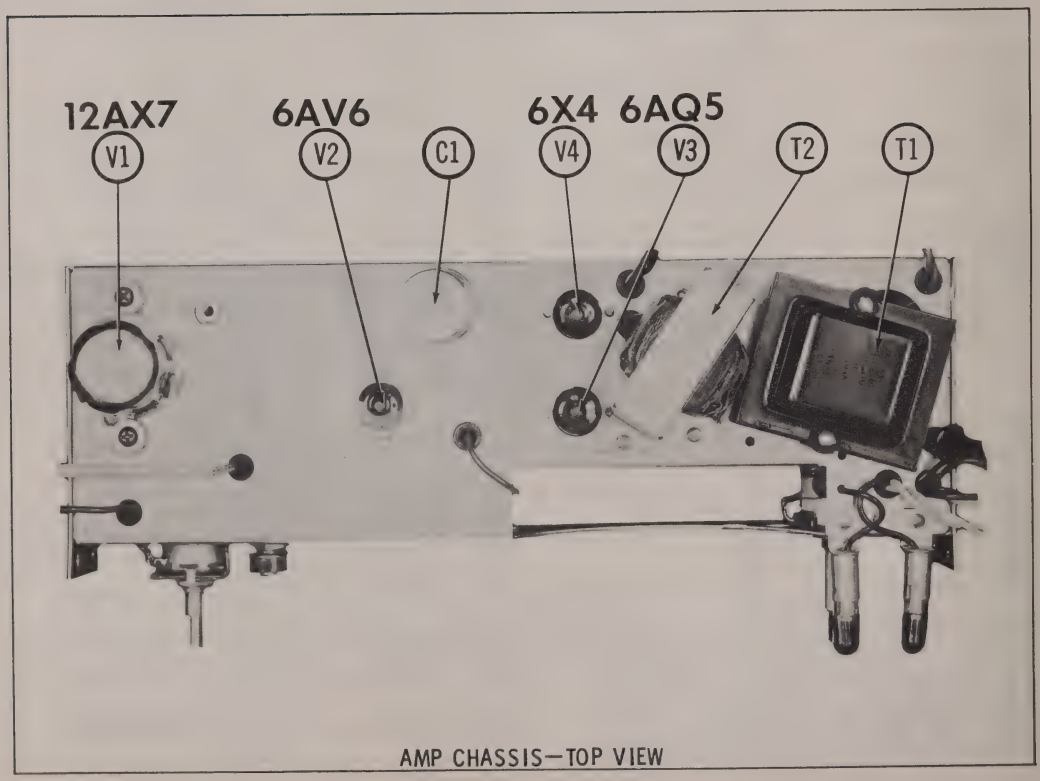
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	C-13.253-7	Speed Shift Knob (Black) (Model 602)	14	E-13.295-8	Front Escutcheon (Silver) (Model 602)
	C-13.253-9	Speed Shift Knob (Gray) (Model 591)		E-13.295-7	Front Escutcheon (White) (Model 591)
2	73-2254-3	Felt Washer 3/4 x 1/4 I.D. x 1/16	15	C-13.318-0	Nylon Reel Pan and Shaft Ass'y. (Left)
3	57-4C-624-5	Screw	16		Not used in These Models
4	57-4C-405-5	#4-40 x 5/16 O.H.M.S. Phil Stl. N.P. (Model 602)	17		Not used in These Models
			18	57-4C-610-5	#6-32 x 5/8 Phillips O.H.M.S. Screw
5	B-32.302-2	Timer Knob (Chrome) (Model 602)	19		
			20	B-19.1561	Spacer
6	73-2334-1	#6 Cantlink Washer	21		Hex Nut
7	D-13.292-2	Timer Escutcheon (Silver) (Model 602)	22	B-33.446	Spacer (2)
			23	E-13.424-2	Baseplate (Gray Hammertex) (Model 602)
	D-13.280-5	Timer Escutcheon (Brown) (Model 591)		E-13.424-1	Baseplate (brown Hammertex) (Model 591)
8	C-13.318-0	Nylon Reel Pan and Shaft Ass'y. (Right)	24	57-3439-0	#6-32 x 3/16 Bristol Head Set Screw
9	B-28.163	Linen Washer 3/8 x 7/32 x .010 Black Varnished	25	B-32.300	Tape Guide Post (Left)
			26	48-410-1	#6-32 Hex Nut
10	C-13.254-15	Control Knob, 2 (Black) (Model 602)	27	B-32.260	Tape Guide Post Spacer
			28	C-35.756-1	Erase Head
	C-13.254-14	Control Knob, 2 (Brown) (Model 591)	29	B-19.1410-1	Erase Head Plate
			30	B-35.1067-2	Pinch Roller and Record Head Ass'y.
11	57-1C-618-1	#6-32 x 1 1/8 Phillips B.H.M.S.	31	57-3439-0	#6-32 x 3/16 Bristol Hd. Set Screw
12	B-35.851-1	Timer Shaft and Indicator Ass'y.	32	B-32.282	Tape Guide Post (Right)
13	B-19.975-2	Rear Escutcheon Plate			

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description
33	57-3102-1	#4-36 x 1/4 R.H.M.S. (Azimuth Adj.)
34	73-2231-1	#4 Int. Lockwasher Stl. C.P.
35	B-36.249	Record-Playback Head M/M (Alt. for B-36.251 W/M) Mon.
	B-36.25	Record-Playback Head W/M (Alt. for B-36.248 M/M) Mon.
36		Record-Playback Head Brkt. Ass'y.
37		Int. Tooth Lockwasher
38		#2-56 x 3/16 Hex Nut
39	57-1C-603-2	#6-32 x 3/16 B.H.M.S. Stat. Brz. (2)
40	73-2231-4	#6 Int. Lockwasher (2)
41		"E" Ring 3/16 Shaft
42	B-28.163	Linen Washer
43	B-33.404	Pinch Roller
44	B-31.351	Reel Drive Spring Belt
45	B-28.163	Linen Washer
46	B-31.361	Erase Head Tension Spring
47	B-31.335	Felt Pads (2)
48	57-1C-603-2	#6-32 x 3/16 B.H.M.S. Sta. Brz.
49	B-35.1047-1	Pressure Pad Ass'y.
50	57-16C-606-1	#6-32 x 3/8 R.H.M.S. (Pressure Pad Adjust)
51	B-31.360	Pinch Roller Spring
52	B-19.881	Playback Actuating Lever
52A	B-35.1045-1	Playback Slide Plate Ass'y.
53	B-35.882	Record Actuating Lever Ass'y.
53A	B-19.868	Record Slide Plate
54	B-33.412	Push-on Stud Nut for 3/16 Stud
55		Flat Washer
56	B-13.258-8	Push Button (Black) (Model 602)
	B-13.258-2	Push Button (Brown) (Model 591)
57	B-19.859	Push-Button Hinge Bracket
57A	B-31.337	Push-Button Return Spring
58	B-31.343	Locking Plate Spring
59	B-19.870	Locking Plate for Push Button
60	B-33.529-2	Midget Jack Closed Circuit 3/8" lg. Bushing (Ext. Speaker)
60A	B-33.528-2	Midget Jack Open Circuit 3/8" lg. Bushing (Input)
61	B-19.867-1	Push-Button Lever
62	48-2219-1	#6-32 x 5/16 Keps Hex Nut
63	B-19.858	Push-Button Retaining Brkt.
64	57-1C-603-2	#6-32 x 3/16 Phillips B.H.M.S.
65	73-2231-4	#6 Int. Lockwasher
66		Phillips Head Screw
67		Washer
68		Washer
69	B-35.775-1	Interlock Lever and Handle Ass'y.
70	B-31.338	Interlock Lever and Handle Ass'y. Return Spring
71	B-35.774-1	Record Interlock Ass'y.
72	73-2241-154	Lockwasher 5/16 O.D. x .144
73	57-3445-1	#8-32 x 3/8 R.H.M.S.
74	B-31.338	Brake Return Spring
75	48-2221	#10-32 Hex Nut (Elastic)
76	73-2241-148F	Flat Washer 1/2 O.D. x .205 I.D. x 1/32 Stl. C.P.
77	B-35.1046-1	Shift Plate Ass'y.
78	C-35.835-1	Brake Slide Plate Ass'y.
79	B-31.339	Idler Lever Tension Spring
80	B-35.1070-1	Brake Spring Ass'y.
81	B-31.335	Brake Pad Felt
82		Lockwasher
83		Hex Nut
84	73.2248-39	Flat Washer .425 O.D. x .255 x .070 Phenolic
84A	B-28.163	Linen Washer
85	B-35.1051-1	Idler Lever Ass'y.
86	B-31.382	Spring Washer
87	B-32.275	#8-32 Hex Hd. Shoulder Screw
88	B-35.859-2	Switch Lever Ass'y.
89	57-3439-0	#6-32 x 3/16" Bristol Head Set Screw
90	B-31.333	Switch Arm Link
91		Phono Jack
92	B-33.118	Spacer for Gear Train
93	73-2231-4	#6 Int. Lockwasher
94	57-1C-603-2	#6-32 x 3/16" B.H.M.S. Phillips
95	73-2231-4	#6 Int. Lockwasher
96	57-1C-614-1	#6-32 x 7/8" B.H.M.S. Phillips
97	D-33.445	Gear Train for Tape Index
98	C-19.837	Motor Adaptor Plate
99	B-28.163	Linen Washer
100	B-35.1066-1	Sheave Pulley Ass'y.
101	B-28.181	Idler Drive Belt
102	B-28.163	Linen Washer
103		"E" Ring 3/16" Shaft
104	B-32.288	Motor Pulley
105	57-3589-1	#8-32 x 1/4" Bristol Hd. Set Screw
106	B-35.1064-1	Idler Slide Plate Ass'y.
107	B-32.264	Idler Slide Bushing
108		Flat Washer, Steel
109	B-19.1431-1	Idle Throw-out Lever
110	B-32.291-1	Shoulder Washer
111	B-31-327	Idler Lift Compression Spring
112	B-35.1044-1	Sub-Idler Plate Ass'y.
113	B-32.275-1	#8-32 Hex Hd. Shoulder Screw
114	B-28.163	Linen Washer
115	B-33.405	Sub-Idler Wheel
116	73-2254-6	Felt Washer
117		"E" Ring 3/16" Shaft
118	B-33.407-1	"C" Washer
119	57-1C-603-2	#6-32 x 5/16" Phillips B.H.M.S.
120	73-2231-4	#6 Int. Lockwasher
121	B-19.961	Detent Spring
122	C-35.816-1	Speed Control Shaft Ass'y.
123	C-35.823-1	Brake Drum and Bushing Ass'y.
124	57-3589-1	#8-32 x 1/4" Bristol Hd. Set Screw
125	B-19.976-1	Drive Mounting Plate Brkt.
126	73-2231-5	#8 Int. Lockwasher
127	57-6C-805-1	#8-32 x 5/16" Phillips R.H.M.S.
128	B-31.324	Idler Tension Spring (2)
129	57-6C-805-1	#6-32 x 5/16" Phillips B.H.M.S.

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description
130	B-28.194	Lord Shockmount (3)
131	C-13.257-1	Flywheel
132	57-3589-1	#8-32 x 1/4" Bristol Hd. Set Screw
133	C-35.823-1	Brake Drum and Bushing Ass'y.
134	57-3589-1	#8-32 x 1/4" Bristol Hd. Set Screw
135	B-33.408	Idler Wheel, 2 1/2" Dia.
136	73-2231-5	#8 Int. Lockwasher
137	57-6C-805-1	#8-32 x 5/16" Phillips R.H.M.S.
138	B-19.862	Angle Bracket for Mounting Drive Ass'y.
139	57-6C-805-1	#8-32 x 5/16" Phillips R.H.M.S.
140	D-35.1054-2	Drive Mounting Plate Ass'y.
141	B-33.411	Flat Washer 3/4" O.D. x 3/16" I.D. x .050 (3)
142	48-2221	#10-32 Hex Nut (Elastic Stop Nut)
143	D-36.153	Motor, Round Type, Fasco
	D-36.241	Motor, Universal
144	B-19.887-1	Fan Blade (Fasco)
	C-19.1553	Fan Blade (Universal)
145	B-19.878-1	Speed Shift Lever
146		Counter Belt



AMP CHASSIS—TOP VIEW

AMP PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Bias Osc.-Preamp.	12AX7/ECC83
V2	AF Amplifier	6AV6/EBC91
V3	Output	6AQ5/EL90
V4	Rectifier	6X4/EZ90

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	RECORDIO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	30	250	B5.437	AFH3-89	C0670	FP331	TMT-74	TVL-3513	
B	30	250							
C	30	25							
C2A	10	200	B5.444	PRS2300	BBRD8025	TCD52	TDLT-26	TVA-2722	
B	10	200							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C4	470 10%		1469-00047	DD-471	5R5T47	CM-20B-471K	MCJ244	MS-347
C5	820 10%		1469-00082	DD-820	1R5T82	CM-20B-821K	MCB251	MS-382
C6	10000 10%		DI-10000		PM6S1	CCD-103	GEM-1611	10TS-S10
C7	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	10000 10%		DI-10000		PM6S1	CCD-103	GEM-1611	10TS-S10
C9	10000 10%		DI-10000		PM6S1	CCD-103	GEM-1611	10TS-S10
C10	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C11	1500 10%			DD-152	PM6D15	CCD-152	GP215	10TS-D15
C12	100		BPD-0001	DD-101	L10T1	CCD-101	UC-531	5GA-T10
C13	3000		SI 3000	DD-302	BYA10D3	CCD-302	UC-523	5HK-D30
C14	100		SI 100	DD-101	L10T1	CCD-101	UC-531	5GA-T10
C15	10000 10%		DI-10000		PM6S1	CCD-103	GEM-1611	10TS-S10
C16	220		DI-220	DD-220	L10T22	CCD-221	B-322	5GA-T22
C17	.0047 600V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C18	3-35	#B-4.144				403		
C19	10000 10%		DI-10000		PM6S1	CCD-103	GEM-1611	10TS-S10
C20	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C21	330 10%	(220mmf) *	1469-00033	DD-331	5R5T33	CM-20B-331K	MCB241	MS-333
C22	5-70	#B-4.146				462		

Recordio Part Number.
* Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	RECORDIO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg 500K Tap	½	C-8.227-2	BT-74	A47F5-1meg	Q19-137X	UT-443	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On
R2A	250K		C-8.231-1①	B-51	A47-250K-S	Q13-130	U44	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

① Alternate Part #C-5.249.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	1.5meg	
R4	330K	
R5	8200Ω 1W	
R6	680K	
R7	4.7meg	
R8	150K	
R9	68K	
R10	470K	

ITEM No.	RATING	REMARKS
R11	100K	
R12	6.8meg	
R13	180K	
R14	47K	
R15	470K	
R16	1.5meg	
R17	330Ω 1W	
R18	22K 1W	

ITEM No.	RATING	REMARKS
R19	3.3Ω 1W	
R20	270K 1W	
R21	270K	(330K) *
R22	120K	
R23	470Ω 2W	
R24	22K	
R25	4700Ω	

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA RECORDIO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc.	B-1.557						

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RECORDIO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .30A	440 VCT @.040A	6.3V@ 1.7A	C-9.281						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	RECORDIO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5200Ω	3-4Ω	C-9.264	26S49	A-3019	AU-606	A-8092	26S49	S-5X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	RECORDIO PART No.	QUAM PART No.	NOTES
SP1	4"x 6"	PM	8-10Ω	C-30.354-2	46AIZ8.6	
SP2	4"	PM	6-8Ω	C-30.353-2	4AIZ6.5	

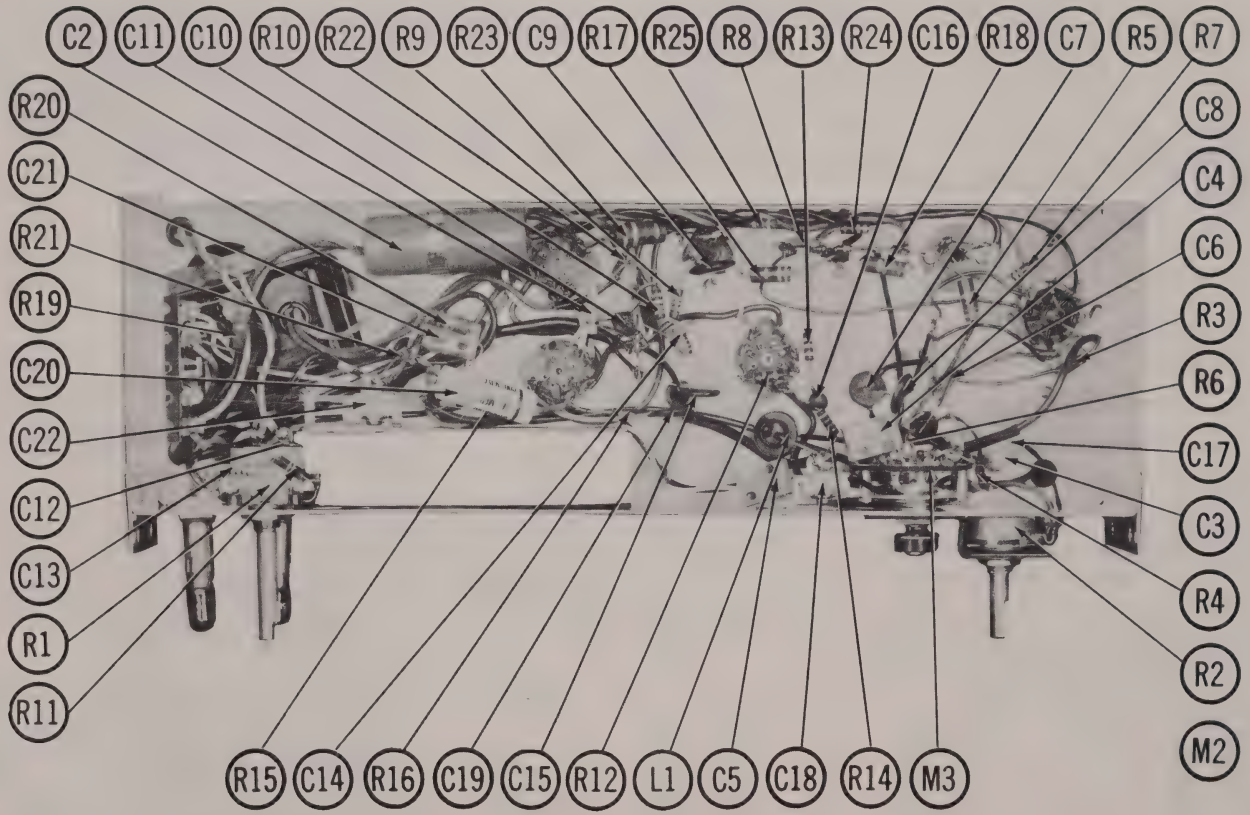
MISCELLANEOUS

ITEM No.	PART NAME	RECORDIO PART No.	NOTES
M1	Erase Head	①C-35.756-1	Assembly (Permanent Magnet Type)
M2	Record-Playback Head	② B-36.249	
M3	Switch	B-11.247	Function
	Switch	④ B-11.287	Speaker (SPDT Slide Type)
M4	Motor Assembly	35.1053	Includes Motor (M5 Part #D-36.153)
	Motor	③ D36.153	Drive Motor
	Microphone	36.195	Crystal

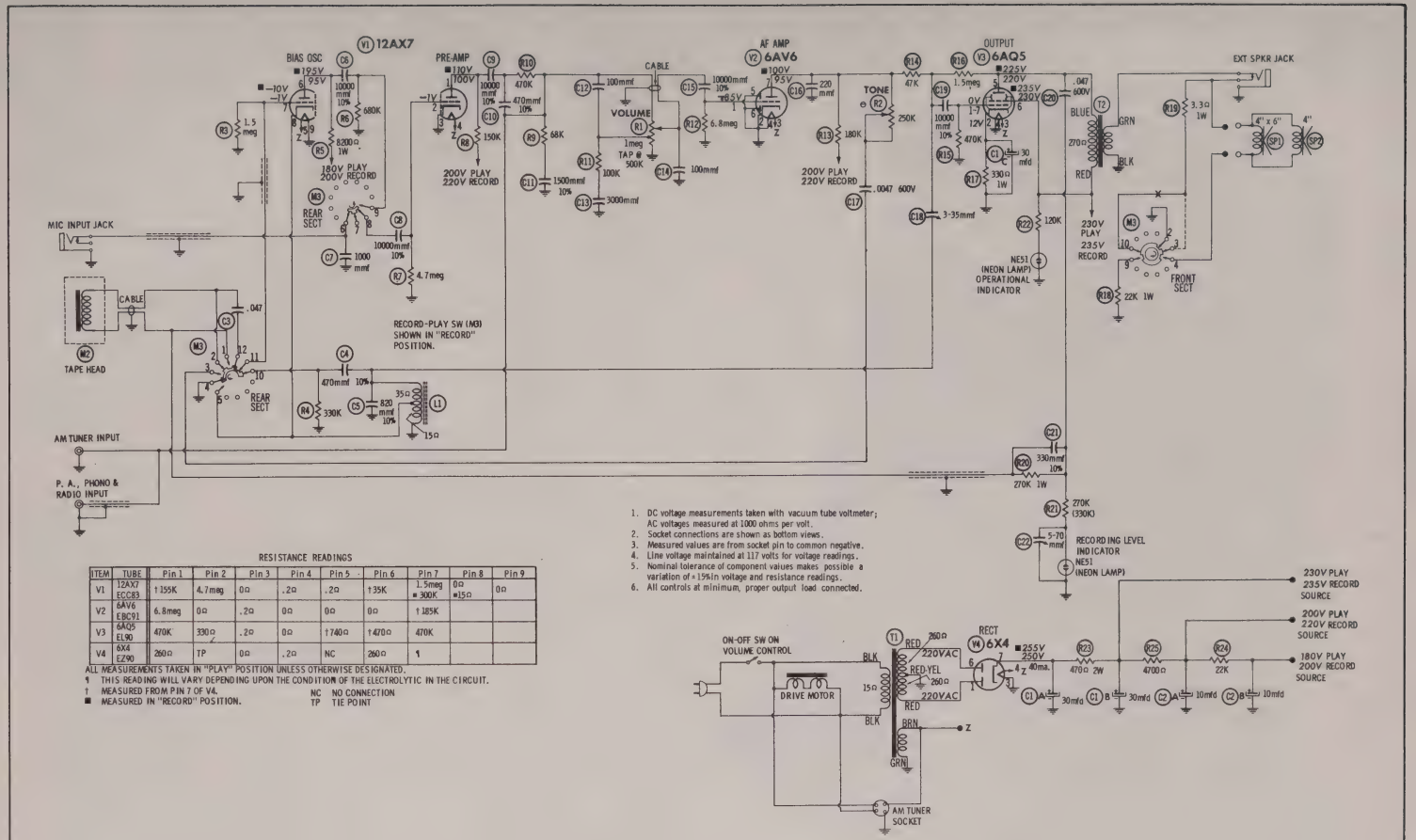
① Some versions may use alternate Part #B-35.1048-1 in this application.
② Some versions may use alternate Part #B-36.251 in this application.
③ Some versions may use alternate Part #D-36.241 in this application.
④ Not used in all versions.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)



AMP CHASSIS — BOTTOM VIEW



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7 ECC83	↑155K	4.7meg	0Ω	.2Ω	.2Ω	↑35K	1.5meg ■ 300K	0Ω ■150Ω	0Ω
V2	6AV6 EBC91	6.8meg	0Ω	.2Ω	0Ω	0Ω	0Ω	↑185K		
V3	6AQ5 EL90	470K	330Ω	.2Ω	0Ω	↑740Ω	↑470Ω	470K		
V4	6X4 EZ90	260Ω	TP	0Ω	.2Ω	NC	260Ω	¶		

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 7 OF V4. NC NO CONNECTION
■ MEASURED IN "RECORD" POSITION. TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1960

RECORDIO MODELS 591, 602

AMP SCHEMATIC

RECORDIO MODELS 591, 602

PHOTOFACT® Folder with CIRCUITRACE®

**SILVERTONE MODELS 2, 3, 4, 5
(Ch. 132.44301, 302, 303, .44401, 402)**

SILVERTONE MODELS 2, 3, 4, 5
(Ch. 132.44301, 302, 303, .44401, 402)

MODEL 2

SILVERTONE MODELS 2, 3, 4, 5
(Ch. 132.44301, 302, 303, .44401, 402)

TRADE NAME	Silvertone Models 2, 3 (Ch. 132.44301, 132.44302, 132.44303); 4, 5 (Ch. 132.44401, 132.44402)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC-DC Operated 5 Tube AM Receiver
POWER SUPPLY	110 - 120 Volts AC-DC
TUNING RANGE—BROADCAST	540 - 1670KC RATING 20 Watts, .2 Amp. @117 Volts AC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4, A7..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

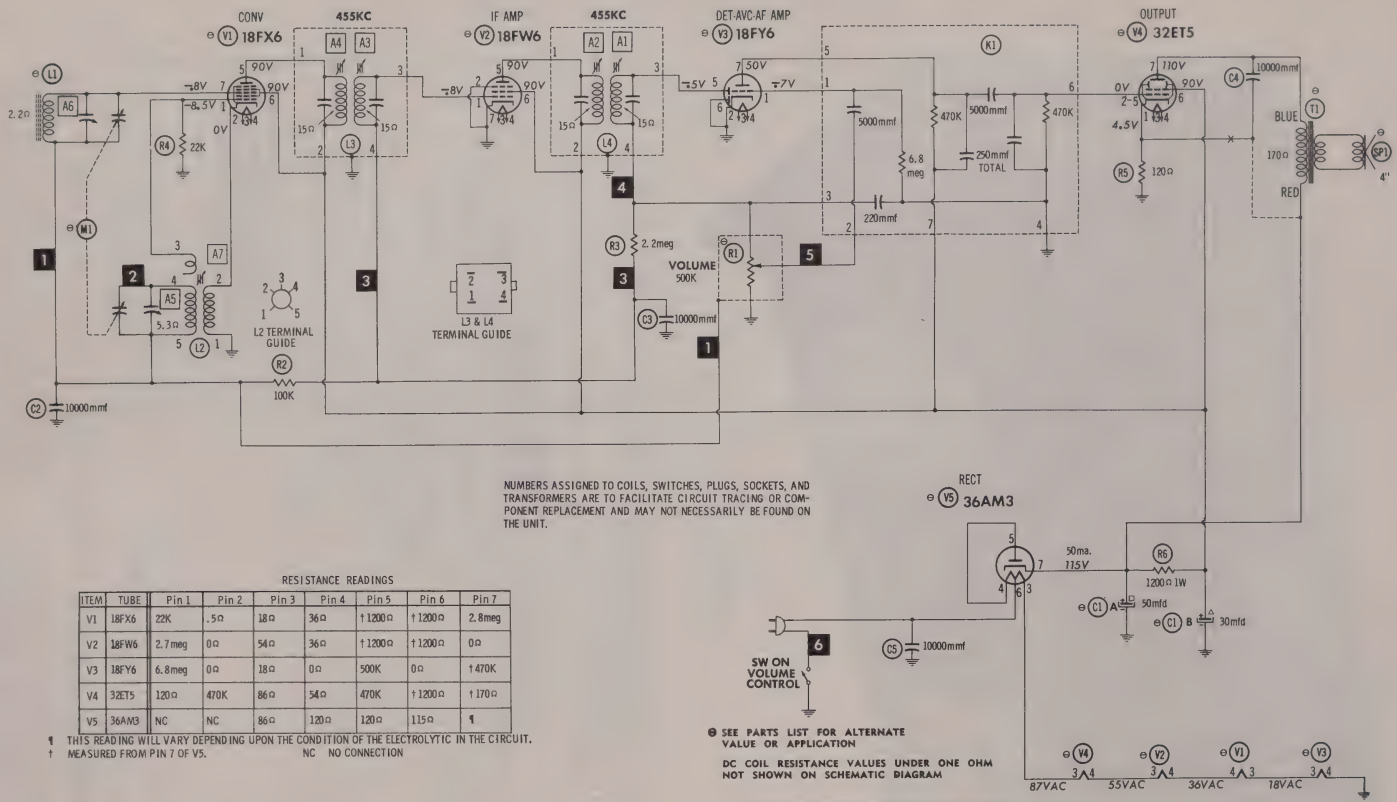
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	High side thru .05 mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ mod.)	Tuning Gang Fully Open	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output
2	Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3	"	1400KC	Tune to 1400KC signal	"	A6	"
4	"	600KC	Tune to 600KC signal	"	A7	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JG733

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 491 FOLDER 14



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	18FX6	22K	.5Ω	18Ω	36Ω	†1200Ω	†1200Ω	2.8meg
V2	18FW6	2.7meg	0Ω	54Ω	36Ω	†1200Ω	†1200Ω	0Ω
V3	18FY6	6.8meg	0Ω	18Ω	0Ω	500K	0Ω	†470K
V4	32ET5	120Ω	470K	86Ω	54Ω	470K	†1200Ω	†170Ω
V5	36AM3	NC	NC	86Ω	120Ω	120Ω	115Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

©Howard W. Sams & Co., Inc. 1960

SILVERTONE MODELS 2, 3, 4, 5
(Ch. 132.44301, 302, 303, .44401, 402)

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	18FX6 (12BE6) *	V4	Output	32ET5 (50C5) *
V2	IF Amplifier	18FW6 (12BA6) *	V5	Rectifier	36AM3 (35W4)*
V3	DET - AVC - AF Amp.	18FY6 (12AV6) *			

*Used In Chassis 132. 44301

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■50	150	43711-9	PWH2-15-05	B0150 †	PWP213.1		PCL-2432	Note 1
B	▲30	150							

Note 1. Part #44328-4 is used in Chassis 132. 44301, 132. 44302, 132. 44401
† Use printed circuit adaptor #55277 & 55278

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	45250-3					Volume Note 1
B	Switch							Power Off-On

Note 1 Chassis 132. 44401, 132. 44402 use Part #45250-14

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	100K	
R3	2.2meg	

ITEM No.	RATING	REMARKS
R4	22K	
R5	120Ω	

ITEM No.	RATING	REMARKS
R6	1200Ω 1W	

COILS (RF-IF)

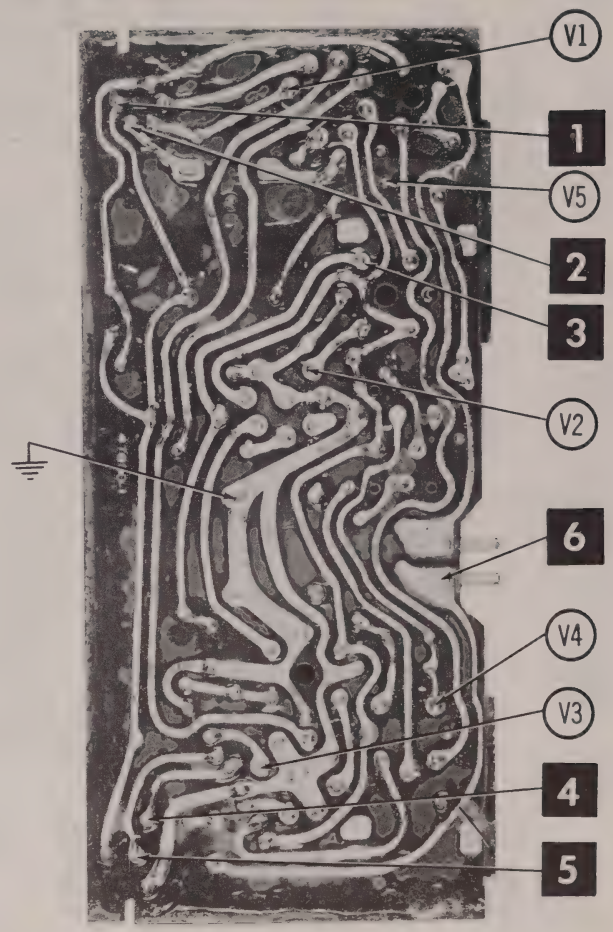
ITEM No.	USE	REPLACEMENT DATA						NOTES
		SILVERTONE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Ant	45735-1						①②
L2	Osc. Coil	43644-1						
L3	Input IF Trans	44282-1	16-6780	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF Trans	44282-1	16-6780	16-6780	BC-357	13-PC10	RF-4	

① Includes Rear Cover Assy. ② Part #45534-3 Used in Model 4, 5.

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2700Ω	3-4Ω	42700-5 ①	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

① Alternate Part #42700-21

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	45600-4 ①	4AIR	① Models 2, 3
	4"	PM	6-8Ω	45600-6 ②		② Models 4, 5 (2 used, connect in parallel)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA	
K1	Audio Coupling	220mmf, 250mmf 5000mmf, 5000mmf, 470K, 470K, 6.8meg	43743-2	Aerovox Centralab Sprague	PA-512-3 PC-158 DT-5

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M1	Tuning Cap	45647	2 Gang, Models 2, 3
	Tuning Cap	46175	2 Gang, Models 4, 5

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

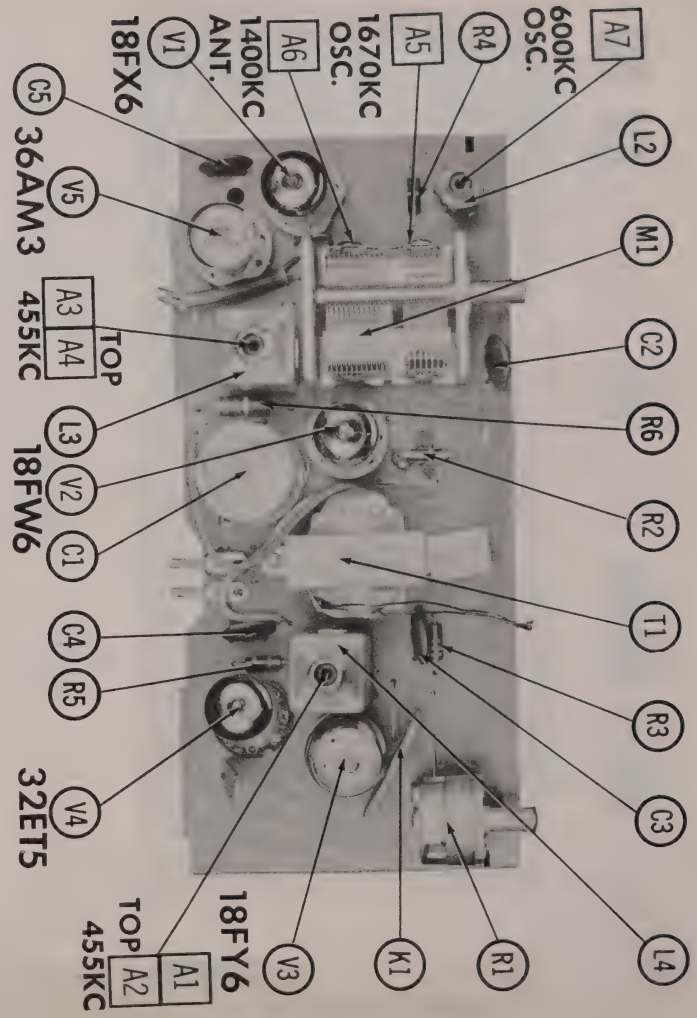
NAME	PART NO.	DESCRIPTION
Knob	45661	Tuning, Volume, Models 2 and 3
Knob	47198	Tuning, Model 4, 5
Knob	47197	Volume, Model 4, 5
Cabinet	47074-48	Model 2
Cabinet	47074-107	Model 3
Cabinet	47192-48	Model 4
Cabinet	47192-107	Model 5

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

SILVERTONE MODEL 214
(Ch. 132.48000, 132.48001)

SILVERTONE MODEL 214
(Ch. 132.48000, 132.48001)

SILVERTONE MODEL 214
(Ch. 132.48000, 132.48001)

TRADE NAME	Silvertone Model 214 (Ch. 132.48000, 132.48001)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC RATING 5 MA @ 6 Volts DC (No Signal, Minimum Volume)
TUNING RANGE-BROADCAST 540-1670 KC	11 MA @ 6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A4, A5..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A6..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

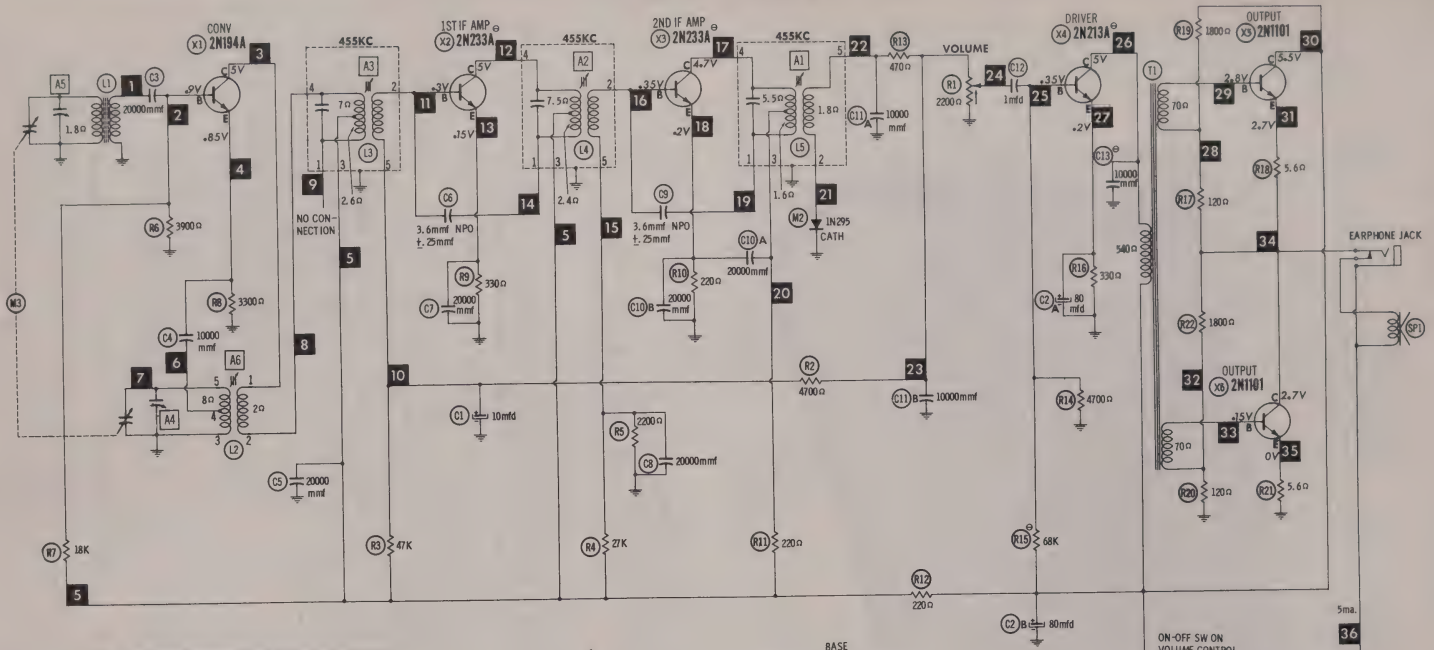
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	High side thru .05mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2	Loop	1670KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3	"	1400KC	Tune to 1400KC signal	"	A5	"
4	"	600KC	Tune to 600KC signal	"	A6	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

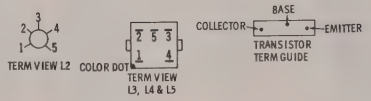
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JF777

SET491 FOLDER 15



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

Ⓔ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

© Howard W. Sams & Co., Inc. 1960

SILVERTONE MODEL 214
(Ch. 132.48000, 132.48001)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N194A	Converter	2N438			2N194A	NPN
X2	2N233A *	1st IF Amplifier	2N438			2N233A	NPN
X3	2N233A *	2nd IF Amplifier	2N438			2N233A	NPN
X4	2N213A †	Driver	2N439	2N649		2N213A	NPN
X5	2N1101	Output	2N306	2N644		2N1101	NPN } Matched Pair
X6	2N1101	Output	2N306	2N644		2N1101	NPN }

*Chassis 132.48001 may use 2N94 in this application.
†Some versions may use 2N1251 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	10	44396-4	PWE-10010	EC10-10	TT12X10	ML10-15	TE-1114	
C2A	80	10	44397-3	BCD10X8080	ECPAN7	PETA2385		VL-2350	
B	80	10							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP203	5HK-S20
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP103	5HK-S10
C5	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP203	5HK-S20
C6	3.6 NPO ± .25mmf		NPO-DI3.3	DTZ-3R3	C10V4C	CCTO-3R3	CNO-533	10TCC-V39
C7	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C8	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C9	3.6 NPO ± .25mmf		NPO-DI3.3	DTZ-3R3	C10V4C	CCTO-3R3	CNO-533	10TCC-V39
C10A	20000		BPD-2X02	DD-203	BYB6S2	CCD-203	GP120	5HK-2XS20
B	20000			DD-203	BYB6S2	CCD-203	GP120	
C11A	10000		BPD-2X01	DD3-103	BYD6DS1	CCD-103	B2X110	5HK-2XS10
B	10000					CCD-103		
C12	1.0 3V	#44684-9		UK-105				
C13	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10

Note 1. Chassis 132.48001 used 3300mmf in this application.
Silvertone Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2200Ω	1/4	46800-4					Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	4700Ω	
R3	47K	
R4	27K	
R5	2200Ω	
R6	3900Ω	
R7	18K	
R8	3300Ω	

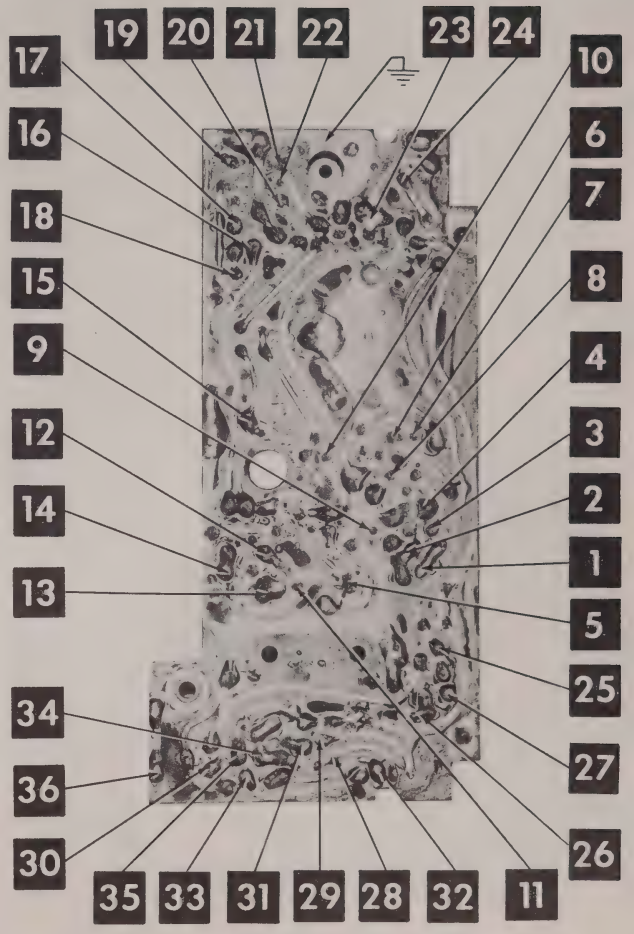
ITEM No.	RATING	REMARKS
R9	330Ω	
R10	220Ω	
R11	220Ω	
R12	220Ω	
R13	470Ω	
R14	4700Ω	
R15	68K	Note 1

ITEM No.	RATING	REMARKS
R16	330Ω	
R17	120Ω	
R18	5.6Ω	
R19	1800Ω	
R20	120Ω	
R21	5.6Ω	
R22	1800Ω	

Note 1 Chassis 132.48001 uses 47K in this application.

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo



PARTS LIST AND DESCRIPTIONS

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		SILVERTONE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	44511-6	14-9005	14-9005				
L2	Osc Coil	45783-12						
L3	1st IF Trans	47163-1						
L4	2nd IF Trans	47163-2						
L5	3rd IF Trans	47163-3						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.1	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3	1	45604-3						
		SEC.2							
		1							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	2 3/4"	PM	44-48Ω	44280-2		

BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	6447 *		930 *		1015 *		M-15R *	*4 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N295		1N295	1N295	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuning Cap Printed Board	47431 47159-1	2 Gang

CABINETS & CABINET PARTS

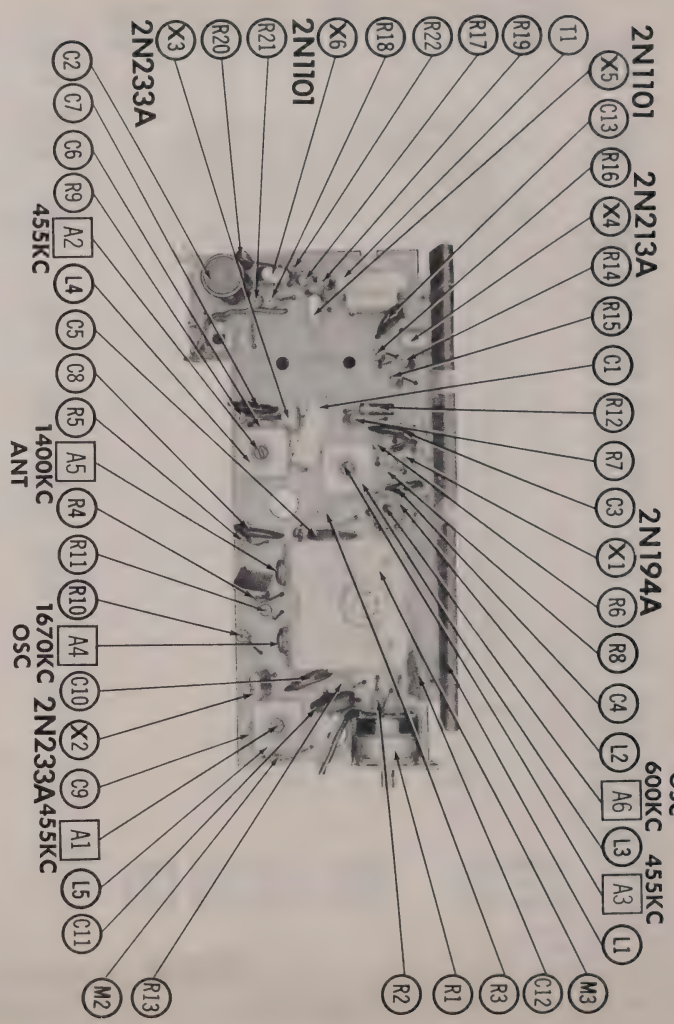
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	47436-29	Tuning
Knob	47437-29	Volume
Cabinet Front	47306	
Cabinet Back	47439-29	
Handle	47438-1	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

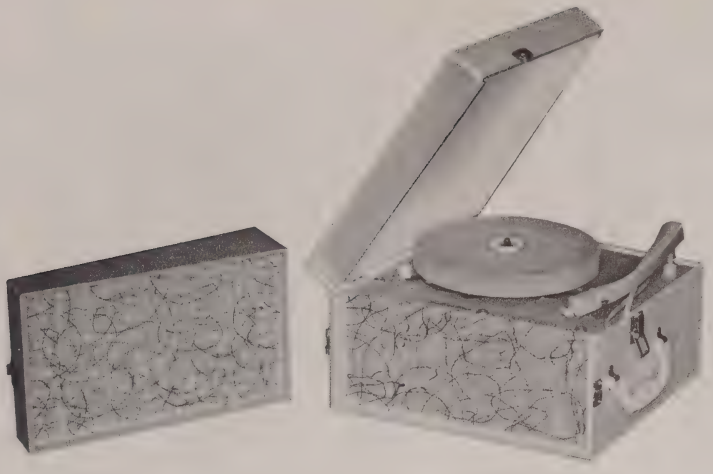
CHASSIS—TOP VIEW



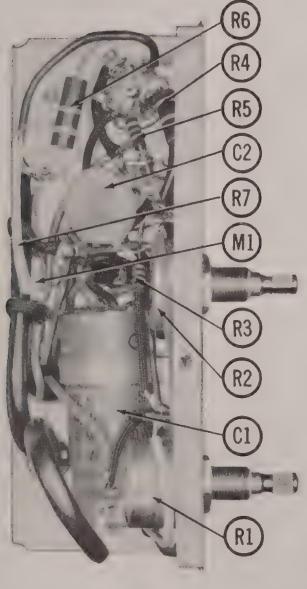
PHOTOFACT® Folder

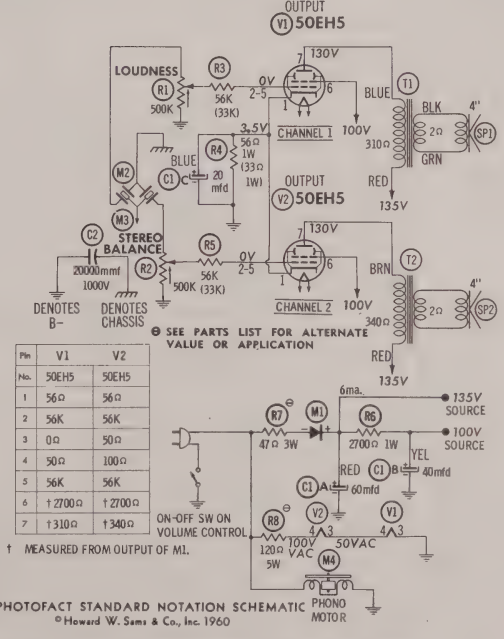
SILVERTONE MODEL 254
(Ch. 528.59620, 528.59621)

SILVERTONE MODEL 254
(Ch. 528.59620, 528.59621)



TRADE NAME	Silvertone Model 254 (Ch. 528.59620 or 528.59621)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC Operated Stereo Phono Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	105-125 Volts AC, 60 Cycles RATING 27 Watts, .28 Amp @ 117 Volts AC





Pin No.	V1 50EH5	V2 50EH5
1	56Ω	56Ω
2	56K	56K
3	0Ω	50Ω
4	50Ω	100Ω
5	56K	56K
6	†2700Ω	†2700Ω
7	†310Ω	†340Ω

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1960

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JT822

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 491 FOLDER 16

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆)
V1	Channel 1 Output	50EH5
V2	Channel 2 Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	18-102-5	PRS4650	BBRT8415C	TCT3107	TDLT-7	TVAS-3436. 3*	
B	40	150							
C	20	20							

*Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	20000 1000V		BPD-02		CUB10S2	16DP-4-203	GEM-1012	5HK-S20

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	24-369-0 ①					Loudness, Channel 1
B	Switch	½						
R2	500K	½	24-370-0					Stereo Balance, Channel 2

Note 1: Some versions may use 500K loudness, without switch, (Part #24-370-0)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	56K	(33K) *
R4	56Ω 1W	(33Ω 1W) *

ITEM No.	RATING	REMARKS
R5	56K	(33K) *
R6	2700Ω 1W	

ITEM No.	RATING	REMARKS
R7	47 3W	#61-166-0
R8	120Ω 5W	#61-165-0

*Alternate value
#Silvertone Part Number

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3000Ω	6-8Ω	80-114-1							
T2	3100Ω	6-8Ω	80-115-1							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	6-8Ω	33-437-4		
SP2	4"	PM	6-8Ω	33-437-4		

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA SILVERTONE PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.060A	86-20-3	SD-94	HA154	K200	SR200	① Silicon Type

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA SILVERTONE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2	33-323-0 (5789)	76TS		96T					

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA SILVERTONE PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M3	83-1338 (5718)	W-104STS † or W-104STD ♦	CRA-57 † or CRA-57D ♦	† Jewel ♦ Diamond
	83-1288 (5720)	W-104MGS† or W-104MGD ♦	CRA-57X † or CRA-57XD ♦	

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M4	Motor	59-82	Drive Ch. 528. 59620 (Includes Speed Control Knob)
	Motor	59-161	Drive Ch. 528. 59621 (Includes Speed Control Knob)
	Tone Arm Assy.	89-9044	Less Cartridge
	Idler Wheel		(Phono) Walsco Part No. 1490-01

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52-830-0	Volume, Tone
Cabinet	42-110-2	
External Speaker Compartment	42-46-4	

WIRING DATA

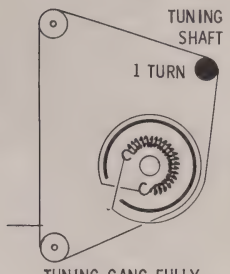
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

TOSHIBA
6TP-304

TOSHIBA
6TP-304

DIAL CORD STRINGING



FRONT VIEW

TOSHIBA
6TP-304

TRADE NAME	Toshiba Model 6TP-304
IMPORTER	Excel Corp. of America, 9 Rockefeller Plaza, New York 20, N.Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC RATING 6 MA @ 9 Volts DC (No Signal, Minimum Volume)
TUNING RANGE-BROADCAST	530-1650KC 9 MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A5, A7..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

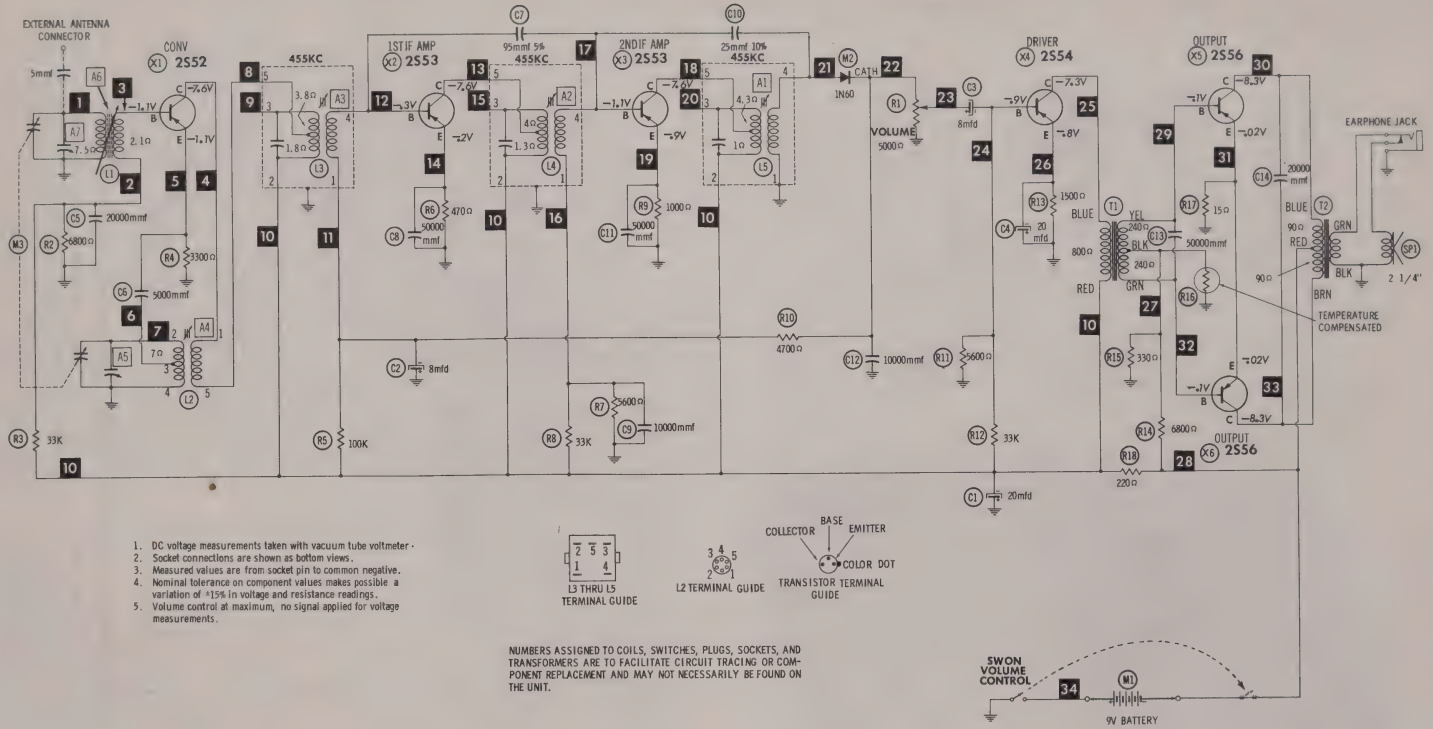
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	Loop	455KC (400~ mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output.
2	"	530KC	Tuning gang fully closed	"	A4	"
3	"	1650KC	Tuning gang fully open	"	A5	"
4	"	600KC	Tune to 600KC signal	"	A6	"
5		1400KC	Tune to 1400KC signal	"	A7	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JF725

SET491 FOLDER 17



1. DC voltage measurements taken with vacuum tube voltmeter -
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

© Howard W. Sams & Co., Inc. 1960

TOSHIBA
6TP-304

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2S52	Converter		2N412	2N486	2N412	PNP
X2	2S53	1st IF Amplifier		2N410	2N483	2N410	PNP
X3	2S53	2nd IF Amplifier		2N410	2N483	2N410	PNP
X4	2S54	Driver		2N406	2N362	2N406	PNP
X5	2S56	Output		2N408	2N632	2N408	PNP
X6	2S56	Output		2N408	2N632	2N408	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	TOSHIBA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	20	10			NLW20-15			TE-1130	
C2	8	3			NLW8-6	TT6X8	ML8-6	TE-1052.5	
C3	8	3			NLW8-6	TT6X8	ML8-6	TE-1052.5	
C4	20	3			NLW20-6		ML25-3	TE-1054	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	20000		C80V203AM	DDA-203	H-05S2		TA-120	TG-S20
C6	5000		C80V502AM	DM-502	H-05D5		TA-250	TG-D50
C7	95 5%		1469-0001	DTZ-100	22R5T1	CM-19B-101J	MCE235	M3-31
C8	50000		C80V503AM	DDA-503	H-05S5		TA-150	TG-S50
C9	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C10	25 10%		1469-000025	DTZ-25	22R5Q25	CM-19B-250K	MCB220	MS-425
C11	50000		C80V503AM	DDA-503	H-05S5		TA-150	TG-S50
C12	10000		C80V103AM	DDA-103	H-05S1		TA-110	TG-S10
C13	5000		C80V502AM	DM-502	H-05D5		TA-250	TG-D50
C14	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TOSHIBA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4		B16-214				Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

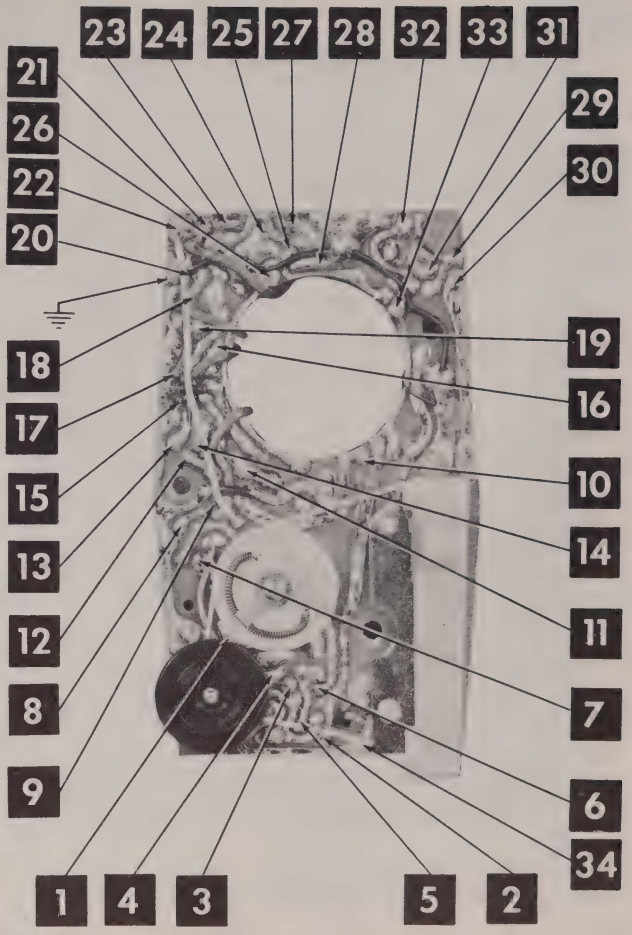
ITEM No.	RATING	REMARKS
R2	6800Ω	
R3	33K	
R4	3300Ω	
R5	100K	
R6	470Ω	
R7	5600Ω	

ITEM No.	RATING	REMARKS
R8	33K	
R9	1000Ω	
R10	4700Ω	
R11	5600Ω	
R12	33K	
R13	1500Ω	

ITEM No.	RATING	REMARKS
R14	6800Ω	
R15	330Ω	
R16		Temp. Comp.
R17	15Ω	
R18	220Ω	

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		TOSHIBA PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick							
L2	Osc Coil							
L3	1st IF Trans.							
L4	2nd IF Trans.							
L5	3rd IF Trans.							

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TOSHIBA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	DT-0311	TR-40			TR-40		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	TOSHIBA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	3200Ω CT	6-8Ω	MT-0470							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TOSHIBA PART No.	QUAM PART No.	
SP1	2 1/4"	PM	8-10Ω	SP-2302A	22AO6Z8	

BATTERIES

ITEM No.	VOLTAGE	TOSHIBA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	006P		2U6		216		M-1604	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		TOSHIBA PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60		1N60	1N60	1N60	Detector (Pigtail)

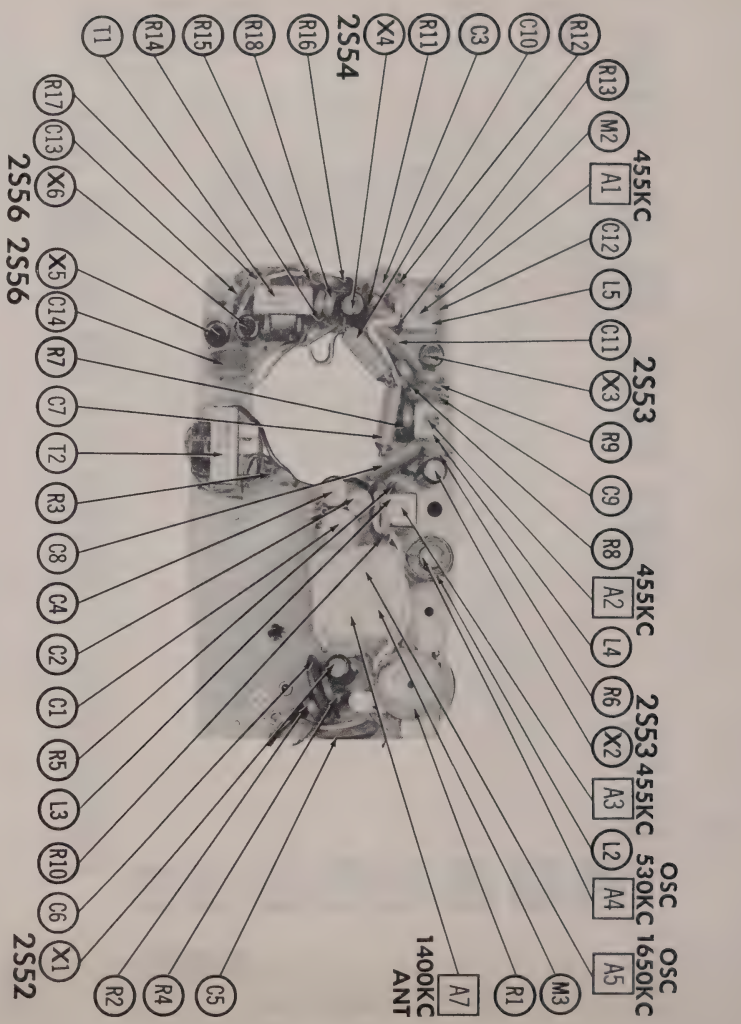
MISCELLANEOUS

ITEM No.	PART NAME	TOSHIBA PART No.	NOTES
M3	Tuning Cap		2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

TRUETONE MODEL DC3088A

TRUETONE MODEL DC3088A

TRUETONE MODEL DC3088A

TRADE NAME	Truetone Model DC3088A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City 8, Mo.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC RATING 4 MA @ 9 Volts DC (No Signal, Minimum Volume)
TUNING RANGE-BROADCAST	540-1650 KC 15 MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3... GENERAL CEMENT #5097, 8727
WALSCO #2515
A4, A6..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A5..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	High side thru .05mfd to base of converter. Low side to chassis.	455KC (400~ mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2	Loop	1650KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3	"	540KC	Tuning gang fully closed	"	A5	"
4	"	1400KC	1400KC	"	A6	"
5	"	600KC	Tune to 600KC signal	"		Retouch A5 for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JF792

SET491 FOLDER 18

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N486	Converter		2N374	2N486	2N374	PNP
X2	2N483	1st IF Amplifier		2N373	2N483	2N373	PNP
X3	CK879	Overload and AVC		2N406	CK879	2N406	PNP
X4	2N482	2nd IF Amplifier		2N410	2N482	2N410	PNP
X5	CK879	Detector		2N406	CK879	2N406	PNP
X6	2N362	Driver		2N406	2N362	2N406	PNP
X7	2N632	Output		2N217	2N632	2N217	PNP } Matched Pair
X8	2N632	Output		2N217	2N632	2N217	PNP }

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	12	10	150-132	XPP10010	EC10-10	TT150X12	ML10-15	TE-1114	
C2	12	10	150-132	XPP10010	EC10-10	TT150X12	ML10-15	TE-1114	
C3	50	10	150-130	XPP10050	EC50-10	TT10X50	ML50-15	TE-1119	
C4A	100	10	150-150		ECPAN7				
B	100	10							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA						
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	10	N750		N750-SI10	TCN-10	C10Q10U	CCTN-100	CN7-410	10TCU-Q10	
C6	50000			BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50	
C7	50000			BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50	
C8	50000			BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50	
C9	50000			BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50	
C10	7.5	NPO 5%	#158-118			C10V8C				
C11	100000		*(50000)	C80V104AM	DDA-104	CUB2P1	1DP-2-104	BT-010	5HK-P10	
C12	50000			BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50	
C13	5.24	NPO 5%		NPO-D15.0		C10V5C	CCTO-050		10TCC-V50	
C14	10000			BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10	
C15	5000			BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50	
C16	5000			BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50	

#Truetone Part Number
*Alternate Value

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	10K	1/2	120-161	B-15	A47-10K-Z	Q13-116	U-18	Volume
B	Shaft			Not Req	KSS-3	Not Req.	Not Req.	
C	Switch			KR-4	SWE-13	76-1	US-26	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

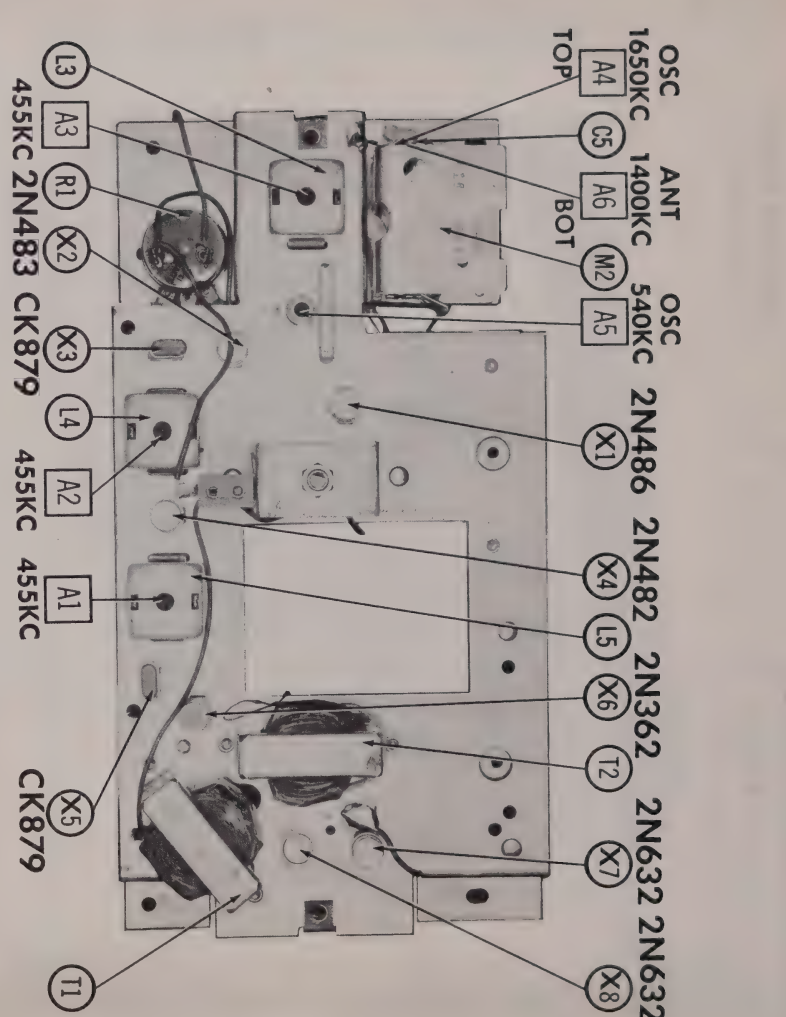
ITEM No.	RATING	REMARKS
R2	6800Ω	
R3	18K	
R4	3900Ω	
R5	680Ω	
R6	560Ω	
R7	2200Ω	(1500Ω) *

ITEM No.	RATING	REMARKS
R8	330Ω	
R9	15K	
R10	220K	
R11	68K	
R12	10K	(8200Ω) *
R13	1000Ω	(680Ω) *

ITEM No.	RATING	REMARKS
R14	560Ω	
R15	8200Ω	
R16	150Ω	
R17	10Ω	
R18	10Ω	
R19	220K	

* Alternate Value.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		TRUETONE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	132-145			BC-419			
L2	Osc Coil	136-144						
L3	1st IF Trans	130-136						
L4	2nd IF Trans	130-137						
L5	3rd IF Trans	130-138						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.5	1	138-142 ①						

① Alternate Part #130-142

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	350Ω CT	3-4Ω	138-143							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	
SP1	4"x6"	PM	3-4Ω		46A1	

BATTERIES

ITEM No.	VOLTAGE	TRUETONE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	*3B6731		* 1		* 635		* M-14R	*6 Required

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M2	Tuning Cap	160-135A	2 Gang (Ant 24-272mmf, Osc 23-125mmf)

CABINETS & CABINET PARTS

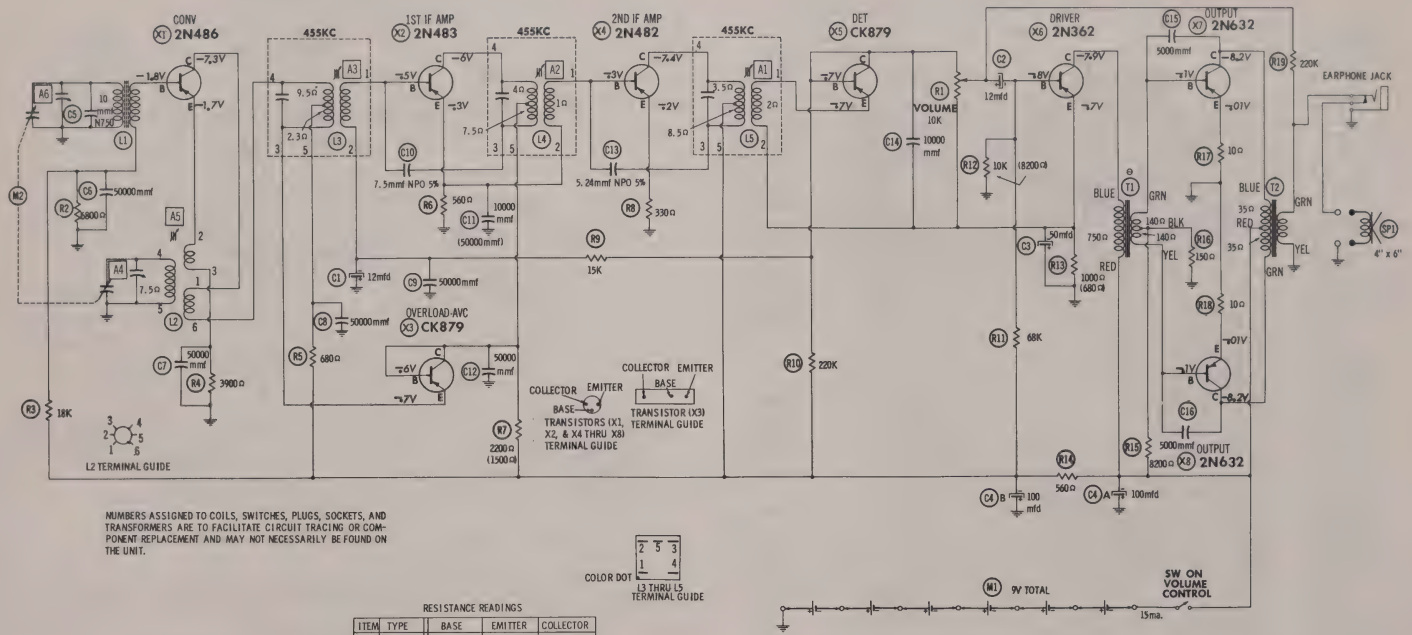
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	220-177	Tuning
Knob	220-174	Calibration Disc
Cabinet	210-167E	
Handle	240-134	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—BOTTOM VIEW



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N486	5500Ω	3900Ω	1100Ω
X2	2N483	25K	560Ω	†2700Ω
X3	CK879	†2700Ω	†1100Ω	†2700Ω
X4	2N482	560Ω	330Ω	†560Ω
X5	CK879	†220K	1000Ω	†220K
X6	2N362	8500Ω	1000Ω	†750Ω
X7	2N632	290Ω	10Ω	†35Ω
X8	2N632	290Ω	10Ω	†35Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS
† MEASURED FROM JUNCTION OF R14 AND C4A.

1. DC voltage measurements taken with vacuum tube voltmeter
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1960

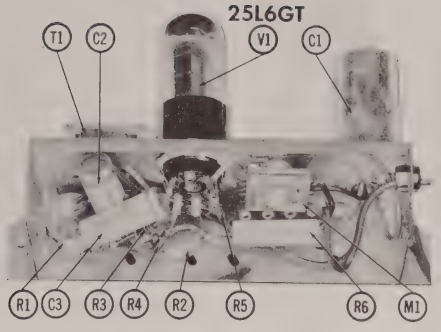
TRUETONE MODEL DC3088A

PHOTOFACT® Folder

WESTINGHOUSE MODELS H-51MP1, H-51MP2, H-51MP3 (Ch. V-2508-1)

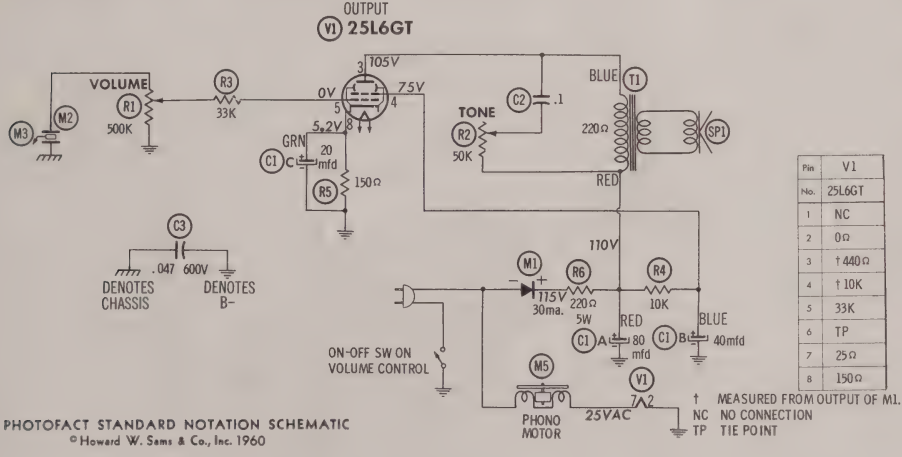
WESTINGHOUSE MODELS H-51MP1, H-51MP2, H-51MP3 (Ch. V-2508-1)

MODEL H-51MP3



WESTINGHOUSE MODELS H-51MP1, H-51MP2, H-51MP3 (Ch. V-2508-1)

TRADE NAME	Westinghouse Models H-51MP1, H-51MP2, H-51MP3 (Ch. V-2508-1)
MANUFACTURER	Westinghouse Electric Corp., Metuchen, N.J.
TYPE SET	AC Operated One Tube Phono Amplifier with 4 Speed Manual Record Player
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 41 Watts, .38 Amp. @ 117 Volts AC (Less Motor)



Pin No.	V1 25L6GT
1	NC
2	0Ω
3	†440Ω
4	†10K
5	33K
6	TP
7	25Ω
8	150Ω

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1960

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JR770

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 491 FOLDER 19

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Output	25L6GT			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	WESTINGHOUSE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	80	150	218V025H34	PRS4650	BBRT84215	TCT3117	TDLT-7	TVA-3455	
B	40	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C3	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	1/2	270V076H01	B-60-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R2A	50K	1/2	270V076H02	B-32	A47-50K-Z	Q13-123	U33	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	33K	
R4	10K	

ITEM No.	RATING	REMARKS
R5	150Ω	

ITEM No.	RATING	REMARKS
R6	220Ω 5W (Fusible)	#251V020H59

Westinghouse Part No.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	4200Ω	3-4Ω	430V084H01	24S48	A-3026	AU-601	A-3877 ①	24S48	S-6X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	570V059H01	4A07	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	Westinghouse PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.030A	295V014H02 *	TO65 *	1234AH *	65*	SR200 ♦	* Selenium Type. ♦ Silicon Type.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	Westinghouse PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M2	690V018H58	314TS	N8-1 & N8-3	46	Not Req.				

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Westinghouse PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M3	690V018H60 (78RPM)	W-64S † or W-64D ♦	CRA-55 † or CRA-55D ♦	† Jewel ♦ Diamond
	690V018H59 (LP)	W-64MGS † or W-64MGD ♦	CRA-55LP † or CRA-55LPD ♦	

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M4	Switch	690V025H17	Off-On (Part of Player Mechanism)
M5	Motor	690V018H73	Turntable Drive
	Tone Arm		Grey

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	550V108H05	Volume
Knob	550V108H04	Tone
Knob	690V025H09	Speed Selector
Knob	690V018H79	Cartridge Turnover
Cabinet	516V116H01	Model H-51MP1
Cabinet	516V116H02	Model H-51MP2
Cabinet	516V116H03	Model H-51MP3

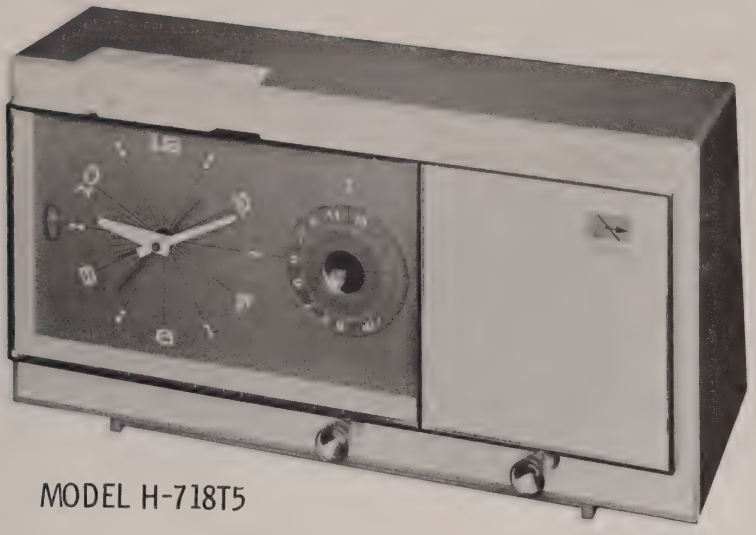
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

WESTINGHOUSE MODELS H-718T5, H719T5, H-720T5 (Ch. V-2401-1)

WESTINGHOUSE MODELS H-718T5, H719T5, H-720T5 (Ch. V-2401-1)



MODEL H-718T5

WESTINGHOUSE MODELS H-718T5, H719T5, H-720T5 (Ch. V-2401-1)

TRADE NAME	Westinghouse Models H-718T5, H-719T5, H-720T5 (Ch. V-2401-1)
MANUFACTURER	Westinghouse Electric Corp., Radio-TV Div., Metuchen, N. J.
TYPE SET	AC Operated 5 Tube AM Receiver With Electric Clock
POWER SUPPLY	105 - 120 Volts AC, 60 Cycles
TUNING RANGE—BROADCAST	535 — 1625KC RATING 26 Watts, .25 Amp. @117 Volts AC (Less Clock)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1, A2... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A3, A4... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru 200mmf to antenna stator lug of tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1625KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	Tune to 1400KC Signal.	"	A6	Adjust for maximum output.

DISASSEMBLY

CHASSIS REMOVAL

1. Remove 2 screws from cabinet top corners and 2 screws from cabinet bottom corners.
2. Slide chassis with cabinet front attached from cabinet.

CLOCK CRYSTAL REMOVAL

1. Remove cabinet front from cabinet. (See chassis removal)
2. Remove 2 speaker mounting screws that extend into crystal studs.
3. Gently pull crystal forward on speaker end and free from notches on clock end.

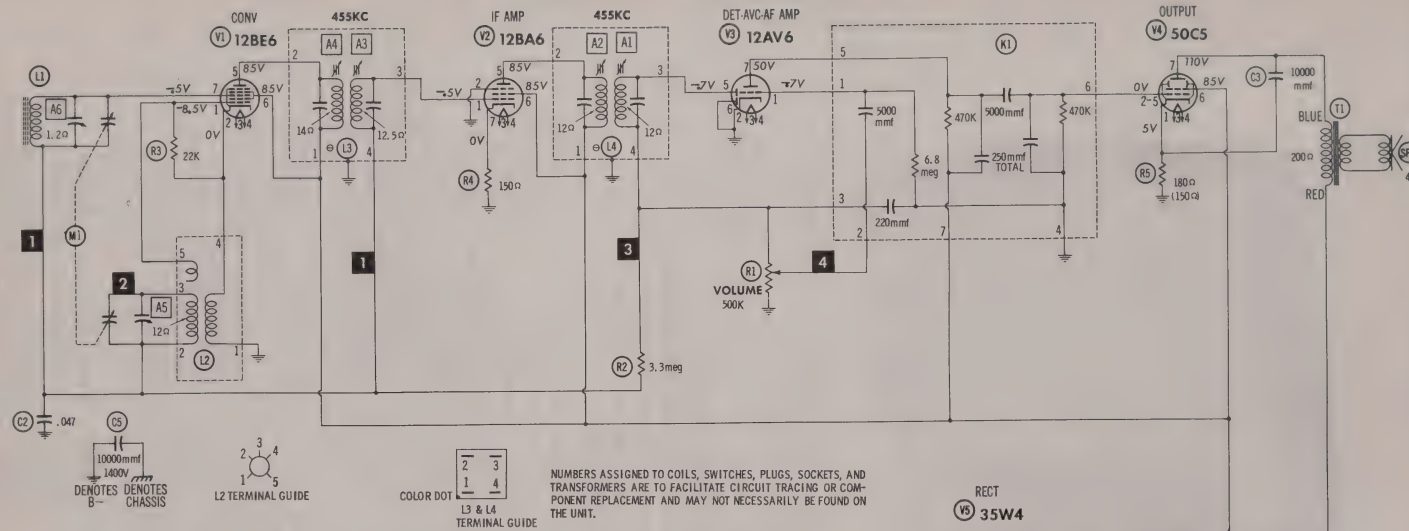
CLOCK REMOVAL

1. Remove receiver chassis and clock crystal (see 2 previous sections).
2. Unsolder clock leads.
3. Remove second, minute, hour and alarm-set hands in that order.
4. Remove 4 clock mounting nuts.
5. Slide clock from cabinet front.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JG969

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.2Ω	24Ω	12Ω	†1500Ω	†1500Ω	3.8meg
V2	12BA6	3.8meg	0Ω	24Ω	36Ω	†1500Ω	†1500Ω	150Ω
V3	12AV6	6.8meg	0Ω	12Ω	0Ω	500K	0Ω	†470K
V4	50C5	150Ω	470K	86Ω	36Ω	470K	†1500Ω	†200Ω
V5	35W4	NC	NC	86Ω	120Ω	120Ω	115Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

© Howard W. Sams & Co., Inc. 1960

WESTINGHOUSE MODELS H-718T5, H719T5, H-720T5 (Ch. V-2401-1)

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆	GENERAL ELECTRIC ◆	RAYTHEON ◆	SYLVANIA ◆

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12BE6	V4	Output	50C5
V2	IF Amplifier	12BA6	V5	Rectifier	35W4
V3	Det.-AVC-AF Amp.	12AV6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■80	150	218V0037H04	PR2-040	BBRD8415	TCD4975		TVA-2460	
B	▲30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C4	.033 600V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C5	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	500K	½	270V083H01					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	3.3meg	
R3	22K	

ITEM No.	RATING	REMARKS
R4	150Ω	
R5	180Ω	(150Ω) *

ITEM No.	RATING	REMARKS
R6	1500Ω 1W	

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Westinghouse PART No.	REPLACEMENT DATA
K1	Audio Coupling	220mmf, 250mmf, 5000mmf, 5000mmf, 470K, 470K, 6.8meg	219V001M01	Aerovox PA-512-3 Centralab PC-158 Sprague DT-5

COILS (RF-IF)

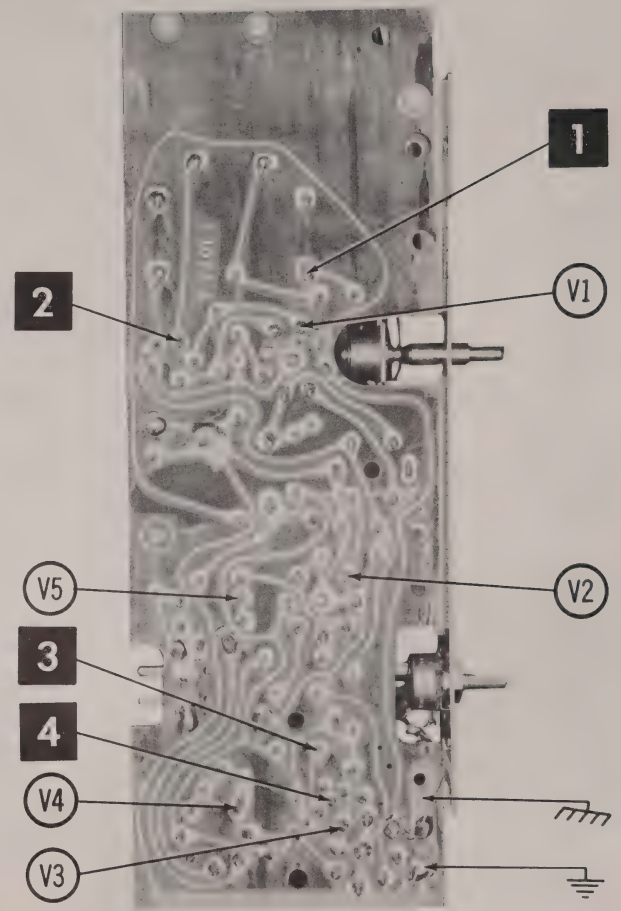
ITEM No.	USE	REPLACEMENT DATA						NOTES
		Westinghouse PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	310V056H01			BC-419			
L2	Osc. Coil	230V004H01						
L3	Input IF Trans.	235V053H01①	16-6780	16-6780	BC-356	13-PC1	RF-4	
L4	Output IF Trans.	235V053H01①	16-6780	16-6780	BC-357	13-PC2	RF-4	

① Alternate Part #235V023H11.

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5000Ω	3-4Ω	(Part of SP1)	24S48	A-3026			24S48	S-6X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	570V077H01 *	4A07	* Includes T1.

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1	Tuning Cap.	330V033H01	2 Gang
M2	Clock	650V017H01	Includes Off-On Switch #690V011H16

CABINETS & CABINET PARTS

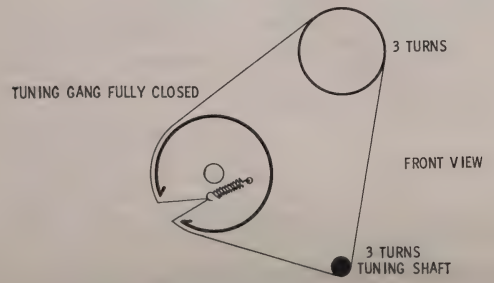
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	550V141H01	Tuning, Volume
Knob	550V138H01	Pushbutton, Clock
Dial	550V139H01	Tuning
Crystal	558V277H01	Clock
Cabinet	513V057H01	Model H-718T5
Cabinet	513V057H02	Model H-719T5
Cabinet	513V057H03	Model H-720T5 (Coral)
Cabinet	513V057H05	Model H-720T5 (Pink)
Cabinet Front	558V276H01	

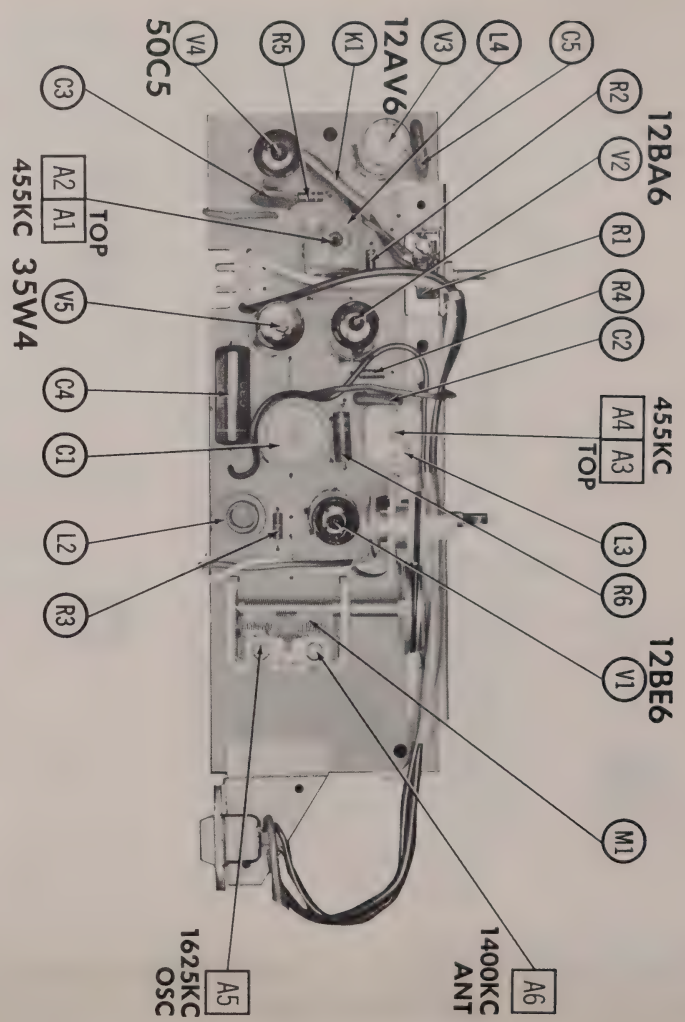
WIRING DATA

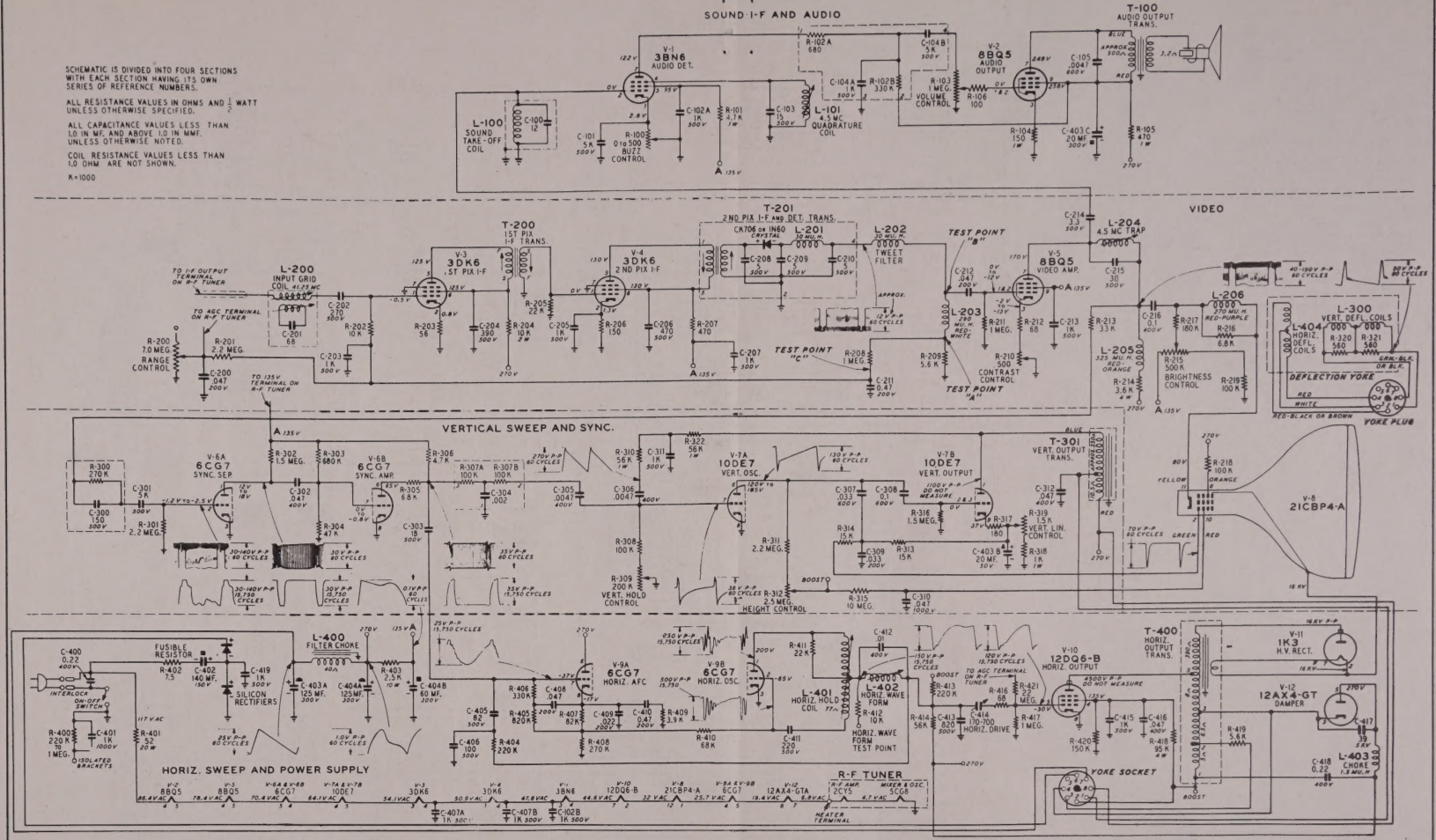
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874

TUNING DRIVE CORD STRINGING



CHASSIS—TOP VIEW





TRUETONE MODELS 2DC1130, 2DC1132, 2DC1134

Schematic Diagram Courtesy of Western Auto Supply Co.

← TRUETONE

SYLVANIA

USE POWER LINE ISOLATION TRANSFORMER WHEN SERVICING THE CHASSIS. PICTURE TUBE HIGH VOLTAGE ANODE LEAD MAY HAVE A POTENTIAL OF 16,000 VOLTS. OBSERVE ALL HIGH VOLTAGE PRECAUTIONS WHEN SERVICING THE CHASSIS. DO NOT OPERATE THE RECEIVER WITH THE HIGH VOLTAGE COVER REMOVED. USE SAFETY GOGGLES AND GLOVES WHEN HANDLING THE PICTURE TUBE.

IMPORTANT

READ THESE INSTRUCTIONS CAREFULLY AND OBSERVE THE CONDITIONS NOTED WHEN TAKING VOLTAGE READINGS OR OBSERVING WAVEFORMS.

VOLTAGE MEASUREMENT CONDITIONS UNLESS OTHERWISE SPECIFIED

1. Voltages measured to chassis using VTVM.
2. AC power source 117V. 60 cycle line.
3. Voltage readings in brackets taken with no signal input; channel selector set to a free channel. Antenna disconnected. Antenna terminals shorted together and grounded to chassis.
4. Voltage readings not in brackets taken with a strong signal input; tuner set to strong local station developing approximately 6 volts on 1F AGC Buss test point (A), (junction of R206 and R208).
5. Contrast control set to maximum. Brightness control set to minimum.
6. Voltage values shown are average readings. Variations may be observed due to normal production tolerances.

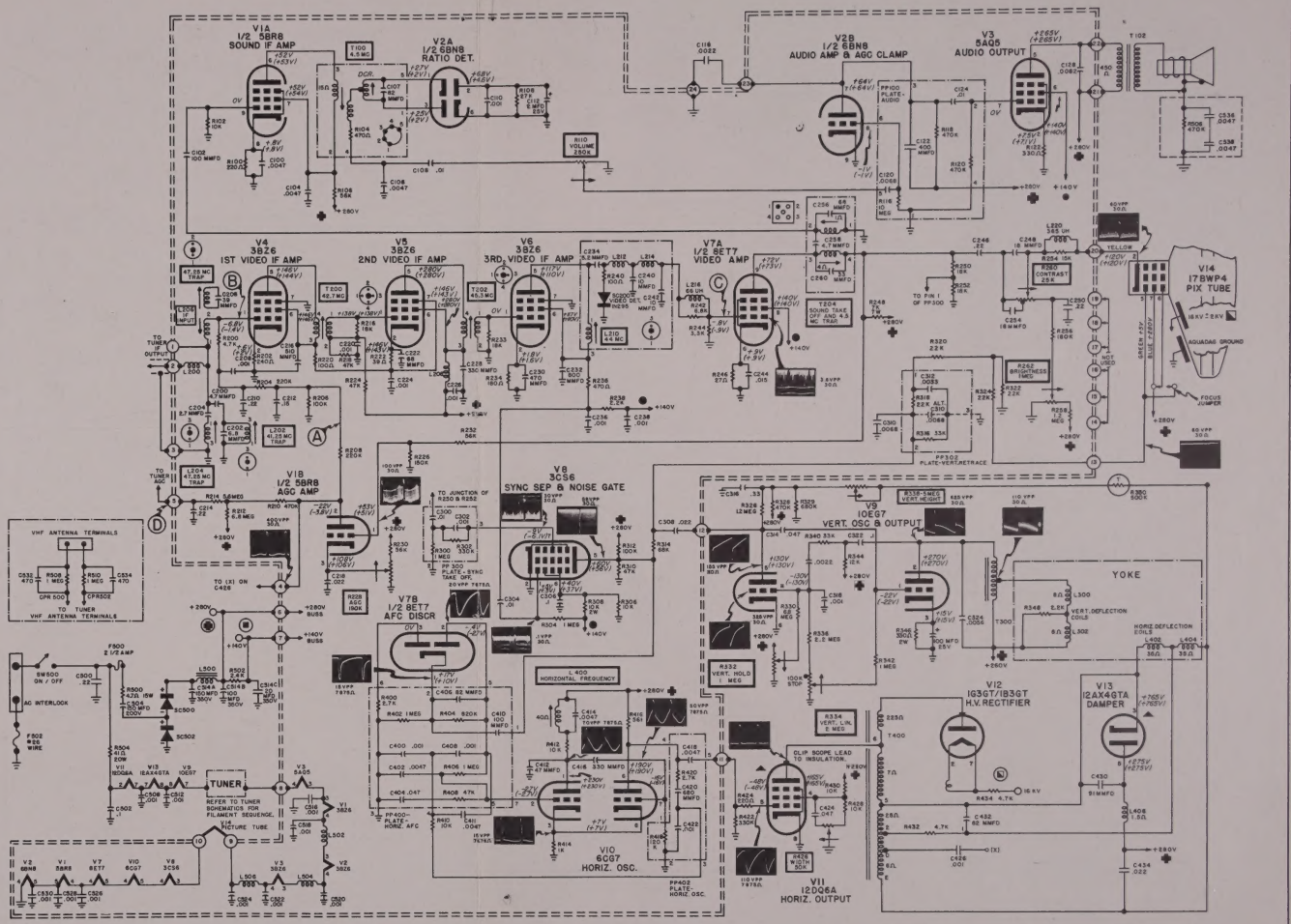
SPECIAL VOLTAGE MEASUREMENT CONDITIONS

(S) Picture tube anode voltage measured with VTVM high voltage probe at line voltage of 117 volts under conditions of normal signal. No brightness and correct scan size.

▲ High peak voltage of short duration may damage meter used for this measurement.

WAVEFORM MEASUREMENT CONDITIONS

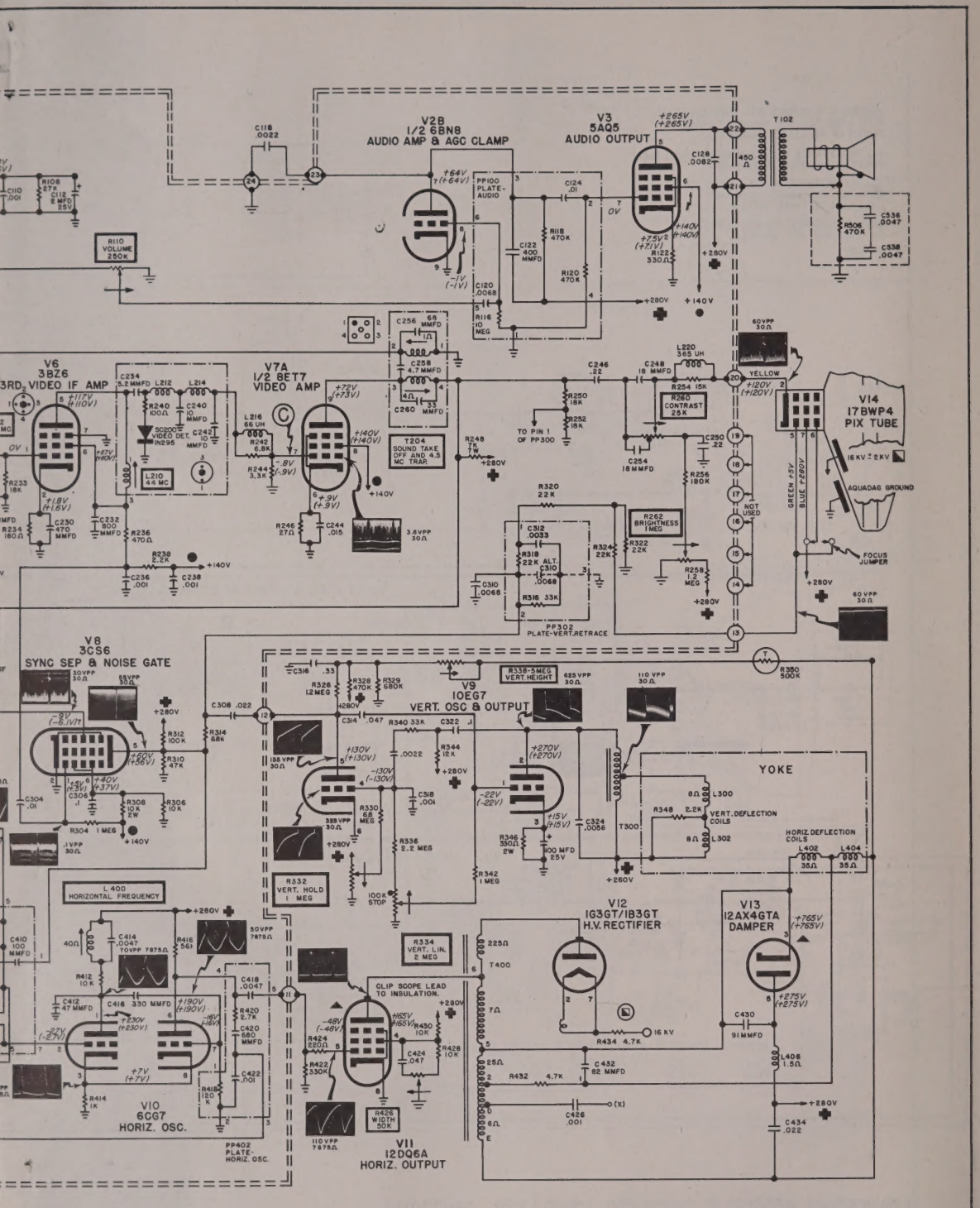
1. Channel selector set to strong channel.
2. Contrast control set for signal of 60 volt peak to peak at yellow lead of picture tube.
3. Waveforms measured with respect to chassis using Sylvania type 40N oscilloscope. (other type oscilloscopes may alter waveform shapes or amplitudes.)
4. The terms "30N" or "7875U" refer to scope sweep frequency used.


V1A 1/2 5BR8 SOUND IF AMP
V2A 1/2 6BN8 RATIO DET.
V2B 1/2 6BN8 AUDIO AMP & AGC CLAMP
V3 5AQ5 AUDIO OUTPUT
V4 3BZ6 1ST VIDEO IF AMP
V5 3BZ6 2ND VIDEO IF AMP
V6 3BZ6 3RD VIDEO IF AMP
V7A 1/2 8ET7 VIDEO AMP
V14 17BWP4 PIX TUBE
V1B 1/2 5BR8 AGC AMP
V8 3CS6 SYNC SEP & NOISE GATE
V7B 1/2 8ET7 AFC DISCR
V9 10EG7 VERT. OSC & OUTPUT
V12 1G3GT/1B3GT H.V. RECTIFIER
V13 12AX4GTA DAMPER
V10 6CG7 HORIZ. OSC.
V11 12DQ6A HORIZ. OUTPUT
YOKE
TUNER
VHF ANTENNA TERMINALS
TO TUNER VHF ANTENNA TERMINALS
AC INTERLOCK
SW500 ON / OFF
REFER TO TUNER SCHEMATICS FOR FILAMENT SEQUENCE.
PICTURE TUBE
HORIZONTAL FREQUENCY
VERT. HOLD 1 MEG
VERT. LIN. 2 MEG
CLIP SCOPE LEAD TO INSULATION
HORIZ. DEFLECTION COILS
VERT. DEFLECTION COILS
FOCUS JUMPER
AQUADAG GROUND
BRIGHTNESS 1 MEG
CONTRAST 250
VOLUME 250K

SYLVANIA MODELS 17B110, 17M101, 17P11 (CH. 547-1, -2)

Schematic Diagram Courtesy of Sylvania Electric Products Inc.

© Howard W. Sams & Co., Inc. 1960



Schematic Diagram Courtesy of Sylvania Electric Products Inc.